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Disease as a Eugenic Force

By NATHANIEL WEYL

Each disease has its own differential impact, but the thrust of disease as a whole is unambiguous. Diseases strike down preferentially the poor, the ignorant, the superstitious, the hungry, those low in vitality, those who live in filth and squalor, the people who drink polluted water, who are lousy and flea-ridden, who live and sleep in huddled masses in which infection is almost inevitable. Thus, the ravages of disease are generally not aristocidal, but the opposite.

Disease tends to be more urban than rural because populations of minimum density and size may be needed to feed it and because congestion creates major health problems of its own.

Comparing one civilization with another, all are exposed to the potential catastrophe of new illnesses to which they have not developed immunity, but the blow is most calamitous and lethal when the exposed population has enjoyed isolation from other human groups and when it has achieved maximum genetic homogeneity. Therefore, primitive peoples and independent civilizations, isolated by marine, forest or mountain barriers, have been almost exterminated by new diseases in epidemic form. On the other hand, peoples who live on or near great trade and migration routes have tended to acquire comparative immunity.

Over the centuries, epidemics have killed more people than armies and germs have won more battles than generals.

The expansion of white settlement to cover the entire habitable globe, following the fifteenth century voyages of discovery, brought new diseases to heretofore isolated and unexposed populations. Native peoples were decimated and non-European civilizations annihilated.

The brilliant indigenous civilizations of the Americas — Mayan, Aztec, Mixtec, Zapotec, Quechua and Chibcha — were destroyed, and the class or classes that created them vanished, leaving behind a mere peasant mass. The élite were eliminated by execution and battle losses against the Spaniards, by intermarriage and by the newly introduced diseases. The native populations as a whole were reduced to a fraction of their size by the combined assault of smallpox, syphilis and other virulent epidemics introduced by the Conquistadores.

In North America, smallpox reduced the Massachusetts and

Narragansett Indians in the seventeenth century from 39,000 to a few hundred. There were an estimated 700,000 Indians in North America when the Europeans arrived. By 1850, only a quarter of a million remained.

When the white men discovered Polynesia, they found a happy, healthy and vigorous people excellently adapted to the illnesses of their island habitat. The Europeans introduced scarlet fever, syphilis and measles which in two generations almost annihilated the population. The 300,000 inhabitants of Polynesia when Cook made his first landfall there in 1778 had shrunk to 37,000 by 1860. The epidemics were so deadly that not a single Polynesian child born in the year 1848 survived.¹

Eskimos and Maoris were similarly decimated by newly introduced diseases. European contacts with Japan, China and India, by contrast, did not create major new medical hazards for these Oriental peoples. Those who inhabited continental land masses and had been in contact with Europe either directly or indirectly had already acquired partial immunity. The isolated populations, particularly the island ones, lacked the advantage of this earlier exposure and consequently perished.

When new diseases first strike a non-immune population, they tend to be virulent and lethal. In time through mutation and evolution, the pathogens and their victims evolve tolerable symbiotic relationships. The great killers of past centuries often survive as comparatively mild children's diseases. The once dreaded afflictions of scarlet fever and measles are good examples.

The human agencies which carry diseases from the regions where they are endemic to virgin territory include armies, navies, merchants, explorers, missionaries and uprooted peoples on the march. Historically, armies have probably been the pre-eminent agencies of infection. They moved large distances; they lived under appallingly unhygienic conditions which weakened their resistance; they were large enough bodies of men to keep diseases infectious even where the latter rapidly reached a fatal course; finally, the institutions of rape, looting and murder provided excellent means for infection of civilian populations.

SYPHILIS

The belief that Columbus's sailors were infected in the West Indies and returned to spread syphilis through Europe was fairly

¹ René J. Dubois, M. D., *Bacterial and Mycotic Infections of Man*, Lippincott, Philadelphia, pp. 16-17.

generally accepted until recently. However, the esteem in which mercury was held as a treatment for "lepra" among the Crusaders argues that syphilis or some related disease was present in Europe or the Near East centuries earlier. For, while mercury is useless against true leprosy, it is a specific for such *treponemal* infections as syphilis and yaws. In 1303, Bernardus de Gordonio wrote that four characteristics of "lepra" were that it was highly contagious, incubated quickly, was acquired through coitus, and that children were sometimes born with it. All of these traits apply to syphilis, none to leprosy.²

The African disease of yaws, which does not require venereal contact for infection, is caused by a *treponema* virtually undistinguishable from that causing syphilis. One theory is that syphilis in a mild, non-venereal form spread from Africa to Europe centuries or millennia before Columbus. Then a mutant *treponema* arose towards the close of the fifteenth century and the disease assumed virulent epidemic form.³

Before the Renaissance, European urban populations were isolated from each other in walled towns. In these small, isolated populations, infections would tend to become endemic; immunity would develop in the human hosts and both parasite and host would achieve some sort of equilibrium.

Treponemal infection probably occurred in the Middle Ages anywhere on the skin surface. Europeans were not ashamed of nakedness and whole families would walk nude to the bath houses. Beds were shared even in noble houses. As late as the mid-sixteenth century, the Earls of Northumberland required that chaplains sleep two and choir boys three to a bed. Since Europeans slept naked, abundant opportunities existed for the spread of *treponemal* infection by skin contact.⁴

Revolutionary changes occurred during the Renaissance and Reformation. Artillery made city walls obsolete and helped destroy the isolation of the towns. The latter grew rapidly, the newcomers building outside the walls.

The Reformation brought a new campaign against nudity and public baths, which was started by the Protestants and echoed by the Counter-Reformation Catholics. As puritanical attitudes

² Calvin Wells, *Bones, Bodies and Diseases*, Praeger, New York, 1964, p. 102.

³ Ronald Hare, "The Antiquity of Diseases Caused by Bacteria and Viruses. A Review of the Problem from a Bacteriologist's Point of View," Don Brothwell and A. T. Sandison (Editors), *Diseases in Antiquity*, Charles C. Thomas, Springfield, Illinois, 1964, p. 125.

⁴ Aidan Cockburn, M.D., *The Evolution and Eradication of Infectious Diseases*, John Hopkins, Baltimore, 1963, p. 158.

towards nakedness spread, the *treponema* presumably met the challenge by becoming venereal. Those bacteria which attempted to pass from skin surface to skin surface would be blocked by clothing and would die. Those that spread *via* the sexual organs would survive and reproduce to the exclusion of the others. Thus both bacteria and the form of the disease would be genetically changed.

In the sixteenth century, Cockburn suggests, syphilis may have been in transition between general and venereal infection. The common method of greeting in Tudor England was the kiss on the mouth. Syphilis was not generally supposed to be transmitted solely by sexual intercourse and Henry VIII accused Cardinal Wolsey of giving him the disease by breathing on him.⁵

During the early sixteenth century, syphilis seems to have been almost ubiquitous in urban Europe. Sir Thomas More wrote that five times as many syphilitic patients attended monastic hospitals in 1529 as had done so in 1499. A third of the population of Paris was said to be infected. Fifteen out of 20 patients admitted to St Bartholomew's Hospital in London were syphilis cases. And Erasmus declared that nobles who had not had the disease were "*ignobilis et rusticans*."

For centuries, the connection between syphilis and paresis, or general paralysis of the insane (GPI), remained obscure. Tabes was first described in 1799, but it remained for the great Japanese bacteriologist, Hideyo Noguchi (1876-1928), to discover *Treponema pallidum* in the central nervous systems of patients dying of paresis and thus to prove that the latter was a tertiary form of syphilis.⁶

Salvarsan, the cure of syphilis discovered by Paul Ehrlich (1854-1915), does not affect the *treponema* once it enters the nervous system. The tertiary stage may or may not develop. It appears usually three to ten years after the primary infection and following a latent period of several years in which the patient, before modern laboratory tests were devised, could enjoy the illusion that he was cured. Paresis can lead to death by rupture of the aorta or by cerebral haemorrhage; it can enter the nervous system causing paralysis; it can enter the brain, causing insanity and anguished death often preceded by periods of grandiose hallucinations approximating to megalomania.

Patients suffering from general paralysis of the insane could expect death in about five years. Syphilis affects survival both by killing those it drives insane and by interfering with reproduction.

⁵ Frederick F. Cartwright, *Disease and History*, p. 64.

⁶ Arturo Castiglioni, *A History of Medicine*, Alfred A. Knopf, New York, 1958, p. 801.

It may cause sterility or the production of weak, diseased and congenitally syphilitic children.⁷

Since we have no way of knowing how many of the poor were sterilized or killed by syphilis, it would be arbitrary to dogmatize on whether the disease was on balance aristocidal. On general grounds, however, there are two reasons for believing that it was. Then as now, the intellectuals and the upper classes had greater opportunities for promiscuity and sexual experimentation than the masses and were less restrained by conventional, religious and legal tabus. Since they lived healthier lives and came of sturdier stock than average, their sexual drives were probably above average.

In any event, the list of historical figures who suffered from syphilis, or were alleged to have done so, is long and impressive.

Cartwright lists as syphilis victims such rulers as Charles VIII and Francis I of France, Henry VIII of England and Czar Ivan the Terrible; among the high clergy, Pope Alexander Borgia, his nephew, Peter Borgia, and the Cardinal-Bishop of Segovia; among artists, Benvenuto Cellini and Toulouse-Lautrec; among writers, Heinrich Heine, Jules de Goncourt, Alphonse Daudet and Guy de Maupassant.⁸

To this list, Emperor Franz Josef of Austria-Hungary should be added and his bride, Empress Elizabeth, whom he infected when she was 16. Before she was assassinated by an anarchist 20 years later, Empress Elizabeth showed such signs of eccentricity or madness as living exclusively on a diet of blood and milk and receiving her Greek teacher upside down on a trapeze.⁹ Their son, Crown Prince Rudolf, whose suicide with his young mistress at Mayerling has been the subject of several romantic movies, was a congenital syphilitic. Winston Churchill's father, Lord Randolph Churchill, contracted the disease from a prostitute and died in agony of paresis, thus cutting short one

⁷ Perhaps the most famous example is Henry VIII of England. His eldest daughter, Mary, was partially deaf, had a "rather low and wide" nose, perhaps approximating the flattened nose bridge of some syphilitics, and exuded a foul smell of which her husband, Philip II of Spain, complained. Henry's son and heir, Edward VI, was a fat, sickly boy whose "unheathful humors" caused his death at 15. Henry's known illegitimate son, Henry Fitzroy, Earl of Richmond, died at the age of 17. All may have been congenital syphilitics. Elizabeth I lived to a ripe old age by the standards of her day, but called herself "but a barren stock."

As for Henry himself, he was married to six women for a total of 36 years. There is no record that he was able to impregnate either of his two last wives in six years of marriage. The probability that he became impotent at 49. Cartwright concludes, "is probably the strongest evidence of syphilis in his marital history." Frederick F. Cartwright, *op. cit.*, pp. 70-73.

⁸ Frederick F. Cartwright, *op. cit.*, p. 65.

⁹ Ralph G. Martin, *Jennie: The Life of Lady Randolph Churchill: The Romantic Years 1854-1895*, Signet, New York, 1969, pp. 134-135.

of the most brilliant careers in nineteenth century British politics.¹⁰

From several medical histories, Ralph G. Martin has culled the names of such other supposed eminent syphilitics as Frederick the Great, Ludwig van Beethoven and Franz Schubert. The researcher at the Wellcome British Medical Library adds to the list Rabelais, Goya, Edouard Manet, Oscar Wilde, Woodrow Wilson and V. I. Lenin.¹¹

Oddly enough, these authorities all omit Benito Mussolini. The fact that he had syphilis is attested by such biographers as Laura Fermi. When I was a young student in London, Angelica Balabanova, who claimed to have picked Mussolini up out of the gutter and groomed him for leadership of the Italian Socialist Party, told me that she had to coax and nag him to go to his doctor regularly for his syphilis treatments. The future Duce of Italy objected that the medication was unbearably painful and would whine and lie and even throw scenes to avoid it.

Another case that is hardly ever mentioned is Abraham Lincoln. In his recollections of Lincoln, published a quarter of a century after the latter's death, Billy Herndon claimed that his great associate had once confided in him that he had picked up a case of syphilis.¹² According to Herndon, Lincoln was greatly disturbed, underwent regular treatment and was presumably cured.¹³ Since effective prophylaxis was not generally available

¹⁰ Ralph G. Martin, *op. cit.*, pp. 63-64, 304-318.

¹¹ I have no means of judging the accuracy of this list. The charge that Woodrow Wilson had syphilis is emphatically denied by his admirers and is not, to my knowledge, taken seriously by his biographers. Lenin asked his physician whether he had paresis, but this does not prove that he suffered from it. Lenin's parents produced six children, five of whom lived to maturity, and of these five, four produced no issue. However, this could be a case, as C. D. Darlington suggests (*The Evolution of Man and Society*, p. 557) of hybrid sterility.

¹² William Henry Herndon and Jesse Weik, *Herndon's Lincoln: the True Story of a Great Life*, 1889. Herndon was Lincoln's law partner in Springfield, Illinois. When he was elected President, Lincoln left Herndon behind to manage his law business because he thought he drank too much to hold down a responsible post in Washington. Herndon's book refutes some of the pious nonsense that was being written about Lincoln at the time, but it treats its central figure with respect amounting almost to veneration.

¹³ Treatment usually was based on mercury injections. Paresis, which Lincoln did not have, was deemed incurable. In 1927, Julius Wagner-Jauregg won the Nobel Prize for his discovery that neural syphilis could sometimes be cured by infecting patients with malaria. This raised body temperature to a point which generally killed off most of the *treponemata*. A story I was told about this was that, when Wagner-Jauregg's award was announced he noticed a pained expression on the face of a Viennese colleague. "Cheer up, Dr Freud," he reputedly remarked, "they haven't announced the Nobel Prize for fiction yet."

at the time, any normal man ran the risk of contracting the disease. Nevertheless, the thought that Abraham Lincoln may have been a syphilitic is so abhorrent to many Americans that Herndon's story is seldom mentioned by biographers.

LEPROSY

The affliction which medieval man regarded with undiluted horror was known as leprosy. The extent to which it corresponded with a sickness known today as Hansen's Disease is a matter of some dispute and much conjecture.

In a funeral sermon delivered in 379 A.D., St Gregory Nazianzus describes lepers as "men already dead except to sin; often dumb, with festering bodies whose insensible limbs rotted off them; heartbreaking and horrifying spectacles of human ruin; objects of repugnance and terror; driven from the house, the marketplace, the village, and the fountain; persecuted even by their parents; disfigured, unrecognizable, identified only by their names; avoided, shrunk from, detested, despised by relatives, fathers, mothers, spouses, children; wandering night and day, naked, destitute, exposing their loathsomeness to the gaze of passers-by to move them and obtain alms."¹⁴

The sequestration of lepers was a solemn ceremony. Kneeling behind the altar and hidden by a black cloth (or, as in Amiens, standing in an open grave), the leper heard mass, and then had cemetery earth thrown on his head three times to symbolize his death to the world.

The priest then formally prohibited him from ever entering church, monastery, fair, mill, marketplace or the company of persons. He must never leave his house without his leper's costume and never go barefoot. He might not drink from any fountain or use any cup but his own. He could not touch any object until he had bought it. Nor could he enter a tavern. He could not have relations with any woman except his own. If an acquaintance met him on the road and spoke to him, he could not reply unless he was down wind from the other person. Nor could he ever enter a narrow lane.

I forbid you, if you go along any thoroughfare, to ever touch a well or the cord unless you have put on your gloves. I forbid you to ever touch children or give them anything. I forbid you to eat or drink from any dishes other than your own. I forbid you drinking or eating in company, unless with lepers.¹⁵

¹⁴ Quoted in Saul Nathaniel Brody, *The Disease of the Soul: Leprosy in Medieval Literature*, Cornell University Press, Ithaca, p. 79.

¹⁵ Saul Nathaniel Brody, *op. cit.*, pp. 66-67.

The leper warned the healthy of his approach with a rattle or castanet or perhaps a bell worn on his shoes. Or he could carry a small horn, as at Lille, or sing *De Profundis*, as at Arles.

Monarchs such as Henry II of England and Philip V of France were impatient of these elaborate arrangements. Philip simply had lepers strapped to a post and set on fire. Henry permitted them a Christian funeral: they were led to their graves and buried alive.

However, as Brody points out, there were many exceptions to this harsh treatment for persons of wealth and rank.¹⁶

A privileged leper could obtain permission to remain outside the leprosarium, either secluded in his own home or in a house or small farm in the countryside. And even were he made to enter a leper house, the situation could be made bearable for a person of position. The leper asylum frequently granted such individuals the right to construct (at their own expense) a building on the leprosarium's land, and certain leprosariums were reserved exclusively for stipulated classes. In Dauphine, there was one leper house for the commons, another for the nobles, and a third for the ladies of the court. The hospital at Walsingham was for lepers who were rich and of good family and that of St Lawrence of Canterbury for the clergy.

Generally incarceration was for life. But the physician's diagnosis could be appealed against and, when the patient's symptoms disappeared, he might be released.

This suggests that there were some differential survival and reproductive advantages for the social élite in the treatment of leprosy. Death would probably come slower and the possibilities of bearing children would be better for the highborn who received special privileges, who lived in comparative comfort, and who had a greater chance of being discharged as cured.

The fact that special leprosariums for court ladies and for the clergy were created shows that the disease was by no means peculiarly an affliction of the poor. Richard I of England may have been a leper and it has been suggested that his sobriquet of "*coeur de lion*" referred, not only to his courage, but to his having the characteristic leonine visage of the leper. A monarch who was indubitably a leper and who died of the disease was Baldwin IV (1161-1185), of the Crusader Kingdom of Jerusalem. This admirable and brave young ruler led his troops into battle when he was already so racked by leprosy that he found it painful in the extreme to raise his lance or ride in armor. An appealing story told about Baldwin is that a courtier once remarked

¹⁶ Saul Nathaniel Brody, *op. cit.*, pp. 69-71.

that it was sad that he should be the only king in Christendom who was a leper. On the contrary, Baldwin replied, he was fortunate to be the only leper in Christendom to be a king!

PLAGUES AND WARS

The plague of Athens, which killed Pericles, lost the Peloponesian War and mortally wounded the most brilliant civilization man has ever known, may have been smallpox or a lethal form of scarlet fever.

A series of plagues of unknown nature during the first centuries of the Christian era may have done more to destroy Rome than the sociological and philosophical causes advanced by such historians as Gibbon, Spengler and Toynbee. The epidemic of 79 A.D. was perhaps fulminating malaria; that of Orosius (125 A.D.) is an enigma; the plague of Galen (164-189) may have also been smallpox.¹⁷ After that came Cyprian's plague and the great outbreak of bubonic plague in the reign of Justinian (540-592) which prevented the re-establishment of the Roman Empire in the West.

One reason the Crusades failed was that the Christian armies were exposed to diseases endemic to the Near East but for which they lacked immunity. In the First Crusade, 300,000 Christian soldiers besieged Antioch in 1098. Three years later, epidemics, scurvy and battle had reduced that force to 20,000. The Second Crusade melted away in similar fashion. The Fourth was laid low by bubonic plague and dysentery.

"The Thirty Years War was in all its phases dominated by deadly epidemics," Zinsser wrote.¹⁸ When Gustavus Adolphus and Wallenstein besieged Nuremberg in 1632, typhus and scurvy killed 18,000 soldiers, forcing both generals to withdraw.

Typhus is a group of related diseases caused by different species of *rickettsiae*, transmitted by arthropods, generally lice and fleas. Its first unambiguous appearance in Europe was in 1489 during the struggle between Spaniards and Moors for Cyprus. Two years later a typhus epidemic struck the Spanish army engaged in the conquest of Granada, killing 17,000 soldiers as against only 3000 slaughtered by the Moors.

The most dramatic achievement of typhus was the destruction of Napoleon's armies during the 1812 invasion of Russia, thus preventing the political unification of Europe. The victory

¹⁷ One theory is that the Huns were infected by smallpox which was raging in Mongolia. When they started their great military westward migration, they gave the disease to the Germanic tribes who resisted them, who in turn introduced it into the Roman Empire.

¹⁸ Hans Zinsser, *Rats, Lice and History*. Little, Brown, Boston, 1935, p. 159.

usually attributed to General Winter was won by General Typhus. The sagacity which Tolstoy attributes to the Russian supreme commander, Kutuzov, in *War and Peace* seems misplaced since microbes had already won the decisive battles.

Napoleon's armies were not destroyed in the retreat from Moscow; they were shattered before they got there. The central invading force, which had crossed the Russian frontier 265,000 strong, had already been reduced to 90,000 effectives when it reached Moscow.¹⁹

The basic problem was that Slavic Europe was a vast region of filth and poverty in which typhus had for centuries been endemic. The Polish peasants were unwashed and verminous. Their habitations were hovels of the most miserable sort. When the Grand Army proceeded into Russia proper, the squalor and vermin became even more ubiquitous.

Polluted water caused massive outbreaks of dysentery and enteric fevers which weakened Napoleon's forces and overcrowded his field hospitals. Despite the fact that his military medical service was the best the world had seen, once typhus attacked this debilitated force, the slaughter was decisive.

In the First World War, typhus caused havoc on the Eastern Front, but was virtually absent in the trenches of France despite crowding and unsanitary conditions. It is estimated that 25 million cases of typhus occurred in Russia during the First World War and the bloody civil war that followed it.²⁰

Hopefully, the last appearance of epidemic typhus on the European Continent was towards the close of the Second World War. With the German transportation system shattered by Allied bombing and food and medical supplies in a shambles, typhus ravaged the concentration and extermination camps, slaughtering tens and perhaps hundreds of thousands of those victims of Nazi genocide who had managed thus far to survive. It may well have caused considerable deaths in the German and Russian POW camps in Poland and the U.S.S.R.

ST ANTHONY'S FIRE

An interesting medieval affliction was known as *ignis sacer* or St Anthony's Fire. First referred to in the annals of the Convent of Zanten (approximately 857 A.D.), the disease struck in epidemic form at least six times between that year and 1129.

Its cause was that the poor ate bread baked from rye, or

¹⁹ Frederick F. Cartwright, *op. cit.*, p. 90. When the last stragglers reached German soil, they numbered 40,000 men, of whom, it was said, only 1000 were ever again fit for duty.

²⁰ Stanley R. Robbins and Jonathan H. Robbins, "Disease: Human," *Encyclopaedia Britannica, Macropaedia*, Vol. 5, p. 857.

sometimes other grains, infected with ergot, a fungus (*sclerotium*) that develops on grasses. The fungal spores are carried to the rye flowers where they germinate, destroy the ovaries of the rye plant and displace them with ergot — compacted microscopic threads similar in appearance to the rye kernel, but larger and darker.²¹ The miraculous cures attributed to St Anthony were due to the fact that the afflicted were cared for in convents and monasteries where they were given ergot-free bread.

Ergot contains about 20 poisonous alkalis, of which one of the most important is lysergic acid (LSD). The infected ears of grain, each containing from one to several ergotized kernels, would be harvested and, if the ergot was not removed, baked into bread.

The symptoms of the disease included colic and vomiting, followed by headaches, vertigo, cramps of the limbs and itching of the skin, paraesthesia and convulsive seizures. It was excruciatingly painful and patients complained of feeling they were being burned alive. When the blood vessels were constricted, gangrene would often set in. Arms and legs would turn black and patients would complain that they were “being eaten up by the holy fire and blackened like charcoal.”²² The fingers and toes of sufferers would sometimes fall off as in leprosy. The convulsive form of ergotism was most prevalent in Russia, the gangrenous form more common in France. It is evident that the symptoms do not resemble LSD intoxication and hence other alkaloids must have been the main pathogenic factor.

In 1934, Sir Edward Mellanby discovered that outbreaks of ergotism generally occurred in periods of food shortage or famine, possibly due to lack of Vitamin A and other protective foods which may give partial immunity.²³

The affliction was borne primarily by the peasantry, by the poorer classes, and by countries with a cold to temperate climate where agriculture was largely on a small-peasant-holding and subsistence basis.

Rye does best in colder climates and, while ergot can infect wheat and other grains, it is primarily a rye parasite. The peasants who worked in the fields and baked their own bread were more exposed to ergotism than the city dwellers who bought ergot-free bread from bakers.

In medieval Europe, the bread of the poor was baked from a variety of whole grains and other substances, including rye,

²¹ Article on “Mycota” in *Encyclopaedia Britannica, Macropaedia*, Vol. 12, p. 756.

²² Austin Smith, M.D., *Encyclopedia Americana*, Vol. 10, p. 473.

²³ Sir Stanley Davidson and R. Passmore, *Human Nutrition and Dietetics*, Livingstone, London, p. 351.

barley, millet, oats, buckwheat, vetch, beans, peas, lupines, lentils and the bark of trees. In parts of France, the chestnut was "the only resource of the rural poor" and was eaten as bread or after having been boiled in water or milk.²⁴

English dietary standards during the Middle Ages were probably considerably better than those of Europe. Since British agriculture was based on large holdings, rather than subsistence plots, a greater proportion of the arable land was under wheat than in France, Germany or Sweden. Probably for this reason, ergotism was common in France, but is hardly mentioned in the English chronicles. A popular derivation of the word *baragouin* indicates the astonishment of Breton soldiers when they first saw white bread in England as contrasted with the rye and other dark bread to which they were accustomed.²⁵

MALARIA

Throughout history, malaria has been one of the greatest of all lethal and debilitating agencies. Where it does not kill, it enfeebles. Malaria has played an often decisive, but almost invariably underrated, role in the rise and fall of civilizations.

From the beginning of the fifth century B.C., there is overwhelming evidence—supported by the writings of Plato, Aristotle, Hippocrates and Galen—that Greece was gripped by an insidious and debilitating disease, one that in all probability was malaria.²⁶ There is no evidence that malaria was prevalent in the age of Homer. It developed only with the cutting down of forests to provide firewood, timber for ships, and more crop and pasture land. This led to erosion and to the formation of stagnant pools and marshes in which malarial mosquitos bred. Wars and civil wars had a similar effect. Irrigation and drainage works would be abandoned in the general disorder or else destroyed by the contending armies.

The decline in the Greek intellect after about B.C. 400 has been attributed to malaria. The disease crossed the Ionian Sea to scourge the Hellenic colonies of Magna Graecia and bring about their decline.²⁷ Hectic shipbuilding, partly to meet the

²⁴ Marc Bloch, "Les aliments de l'ancienne France" in Jean-Jacques Hémardinguier (Editor), *Pour une histoire de l'alimentation*, Librairie Armand Colin, Paris, 1970, p. 233.

²⁵ E. Paramalee Prentice, *Hunger and History*, Caxton, Caldwell, Idaho, 1951, p. 62. *Baragouin* means outlandish or unintelligible speech. Its component parts are the Breton words *bara* for bread and *gwenn* meaning white.

²⁶ W. H. S. Jones, "The Prevalence of Malaria in Ancient Greece," in Don Brothwell and A. T. Sandison, *op. cit.*, p. 175.

²⁷ C. F. Craig and E. C. Faust, *Clinical Parasitology*, Kimpton, London, 1945.

military needs of the Punic Wars, deforested the central Italian plains and created swamps and marshes. The African mercenary armies of Carthage brought malarial parasites with them and these found lodgement in the swamp lands. The centuries of Rome's decline may have been associated with a significant increase in the incidence of malaria.²⁸

The disease has also been known in ancient China. It has been credited with forcing abandonment of the great Khmer city of Angkor Wat in Cambodia and with playing a rôle in the decline of Mayan civilization.²⁹

In his great work on the Mediterranean, Braudel points out that "there is not a plain in the Mediterranean today, from Portugal to Lebanon, that is not threatened by the danger of flood waters. Even Mecca disappears under torrential rains in some winters."³⁰

As these waters recede, they often leave stagnant ponds, marshes or swamps of reeds because of the flatness of the plain, the slow efflux of the water, the fact that sand dunes bar the way to the sea as in the case of the Pontine Marshes, or for some other reason. Here water becomes synonymous with death.

Malaria in ancient times was often fatal and, when not fatal, it wore men out. Anemic communities, infected by mental and physical lassitude, would lack the energy either to solve their problems or to defend their frontiers.

In the sixteenth century, Braudel writes, "plague, carried from India and China by long-distance travellers, although greatly to be feared, is only a passing visitor to the Mediterranean. Malaria is permanently installed there."³¹

Before the discovery of quinine or its successor synthetic drugs, the cure for malaria was to drain the marshes, put the plains under the plow, create irrigation and drainage systems, and never neglect them. Endemic malaria would sap the will of the people to do these things. If famine, epidemic or war destroyed the hydraulic system, malaria would return. Or else the forests were cut down: in the Roman case, to build ships and to supply firewood for the great public baths.

The virulence of malaria has varied from one historic epoch to another. A significant increase is believed to have occurred towards the close of the Roman Empire in the West, and again toward the end of the fifteenth century.³² New pathogenes may

²⁸ C. D. Darlington, *op. cit.*, p. 252.

²⁹ A. A. Sandosham, M.D., *Malariology with Special Reference to Malaya*, University of Malaya Press, Singapore, 1965, p. 10.

³⁰ Braudel, Vol. I, p. 63.

³¹ Braudel, *op. cit.*, Vol. I, p. 64.

³² P. Hildebrandt, *Der Kampf ums Mittelmeer*, 1940; Braudel, *op. cit.*, p. 65.

have been introduced in the latter period from the Americas and perhaps from Africa. Braudel points out that Baiae in the Bay of Naples, a resort for high society in Roman times and described as charming in a letter Petrarch wrote in 1343, was deserted in the sixteenth century because its population had fled the fevers. Cyprus had such a bad reputation for malaria that captains, transporting pilgrims to the Holy Land in the sixteenth century, had to agree not to put in to the island for more than three days. The evidence points to a major increase in the degree to which malaria affected the Mediterranean in the century after Columbus.

Malaria is a disease of the plains. The mountain folk are normally not affected. There are other climatic limitations. If a mosquito carries it at temperatures below 68 degrees Fahrenheit, the malarial parasite will not mature during the lifetime of its host and cannot therefore infect man. Nor can the *Anopheles* mosquito breed at temperatures below 61 degrees or if humidity is lower than 63 per cent.³³ These limitations grant comparative immunity to the colder regions of the earth and to most of the temperate zones.

In regions of endemic malaria, the native population often buys partial immunity at a terrible cost. Defective types of haemoglobin develop through mutation. While there are several dozen of them and hence sweeping generalizations permit exceptions, they generally cause fatal anemia in the pure (homozygous) state and severe anemia in the mixed (heterozygous) condition. Sufferers from these genetic anomalies, the best known of which is sickle-cell anemia, escape severe and chronic malaria because the parasite finds the mutant blood pigment indigestible. Darlington calculates that, if a third of the relevant genes in a population exposed to malaria are mutants of this sort, one-ninth of the people will die of the homozygous mutation, probably in childhood, but nearly a third will survive, without severe malaria, but with greatly reduced vigor.³⁴

Like most other diseases, malaria has an impact that is the reverse of aristocidal. Areas subject to malaria are avoided by all those who can afford to do so. Only the poorest, the least skilled, the least capable, the people who are driven to marginal and insalubrious lands by the fear of starvation remain in heavily malarial areas. Disease in general strikes at the poorest and most ignorant classes, peoples and races. Malaria is no exception.

³³ H. H. Lamb, "Climate" in *Encyclopaedia Britannica, Macropaedia*, Vol. 4, p. 728.

³⁴ C. D. Darlington, *op. cit.*, pp. 39-40.

The Distribution of Anthropological Traits in Europe

By BERTIL LUNDMAN*

INTRODUCTION

Geography and history are critical factors in the ethnogenesis of the living peoples of Europe. Some of these groups consist of hypotheses, which would lead too far afield to substantiate more precisely at this time. This article will above all deal with the anthropological relations in Europe at the time of the beginning of industrial civilization. This is the only somewhat static epoch about which we possess extensive knowledge. From this point we shall go back to the time of the first expansion of the Indo-European peoples. However, it is hardly possible to go back further in time.

In terms of natural geography Europe forms an appendage of the Eurasian continent. However, we can still not deny the great independence which our part of the world possesses when viewed from a purely anthropological standpoint. For Europe was and is up to our time the dwelling place of the bulk of the White or Europid race and for most of its pronounced subraces. To the south the region of the predominantly Europid race extends approximately to the northern border of the Sudan savannah. East of the Nile river, however, the racial boundary is very indistinct. In Asia Europid races fill up all of southwest Asia and predominate also in the north of western India—becoming rarer about the northern Deccan region and around the lower Ganges region.

East and north of these areas begins the predominance of the Mongolid races. The Mongolids dominate also in the steppes of southernmost Russia to the lower reaches of the Volga River and up toward the Ural mountains. From here on the racial boundary is likely to pass between the still predominantly Europid Volga Finns and the predominantly Mongolid Voguls, Ostiaks, and Samoyeds. It then reaches the European Arctic Ocean somewhat south of the mouth of the Pechora River.

Herewith we have delineated the predominant Europid region in the Old World. Within this region are found only a few small non-Europid enclaves. One of these is the tiny predominantly Mongolid Pussta region of Hungary—and also the region north of the Azov Sea in the Ukraine. There are in addition a few no less interesting smaller predominantly Negrid regions in the Sahara—and now also in the Atlas mountain region of Morocco.

* Translated from the German by Donald A. Swan.

PIGMENTATION—SKIN COLOR, HAIR COLOR, AND EYE COLOR

The difference between these Europid races in Europe and the other races of the world is among other traits in the skin. The difference is, however, more in the nature of the skin and less in its color. Skin color varies among different national groups in Europe from rosy-white to rather dark-brown. The latter color is already somewhat darker than among some of the so-called colored races. In addition, there are millions of much darker-skinned, but clearly Europid, peoples in India and also South Arabia.

The thick- and dense-skinned yellow and red race shows no *strong* change in skin color in its vast and varied range of distribution. The Negro has become more or less black in skin color. However, among the Europids pigmentation has been extensively adapted to the existing milieu. Map 1 shows the distribution of eye color and hair color in Europe. The six zones range from light-mixed hair and light eyes in England, Scotland, Scandinavia, north Germany and Poland, the Baltic States, and northwest Russia to dark hair and dark eyes in Portugal, south Spain, south Italy, and Greece.

Maps 2 and 3 show the distribution of hair color and eye color among school children in Central Europe. The maps were compiled by the author from the original reports of the great "Central European School Children Investigation" by Virchow (1876), Kollmann (1881), and Schimmer (1884). The Hair Color Index indicates six zones in Central Europe. These range from two very light-haired regions in northwest and northeast Germany, where the number of dark-haired children is 10 to 30 per 100 light-haired children, to two very dark-haired regions in the Sudeten and Alpine Mountains, where the number of dark-haired children is 170 or more per 100 light-haired children. The Eye Color Index also indicates six zones in Central Europe. These range from two very light-eyed regions in northwest and northeast Germany, where the number of dark-eyed children is 20 to 40 per 100 light-eyed children, to a small very dark-eyed area in the southern Alps, where the number of dark-eyed children is 200 or more per 100 light-eyed children.

The great culture capability of the European peoples, especially the North Europeans, can possibly find its explanation in part—even if only indirectly—in their particularly good adaptation to the cool-damp type of climate. This type of climate is in certain respects especially culture-furthering—for example, for life in the study room and also in work shops. We can also assume with the greatest certainty that the most strongly depigmented Europid races originated in the cool-damp northwest part of the continent. They did not originate in very great distance from this region—namely east of the Baltic shield. Here the climate in all periods of climate-change

immediately before and during the last Ice Age was probably too sunny for blond persons.

Consequently, the alpine and subarctic regions with their strong summer solar radiation—and also the reflection of sunlight from glaciers and snow surfaces—are less suited for lightly pigmented individuals. Modern polar expeditions, for example, do not like to take along blond persons. Again one also observes a slight increase in pigmentation somewhat north of a line that can be drawn through the Valdai Hills (Russia)—Estonia—central Sweden—south Norway. A similar increase in pigmentation is also observable in many mountain regions.

In many places in north Russia—up to the Kola peninsula—the increase in pigmentation finds its explanation in late and secondary migrations of eastern, more or less Mongolid, groups. These groups are physically—and also culturally—especially adapted to these cold regions. In comparison, the dark Scandinavian Lapps are certainly completely Old Europid in origin. They have also been in their present region for a very long time. The Lapps, therefore, are even more deeply pigmented.

The dark coloring of the iris is also a protection against too strong solar radiation. However, the coloring of the hair—as far as can be estimated up to the present time—is of less importance. It is of interest that the populations of the dampest, for the most part oceanic, regions of Europe—namely, the western areas of Great Britain and Ireland—show a much darker pigmentation of the hair than of the skin and eyes.

Maps 4 and 5 show the distribution of hair color and eye color in Great Britain and Ireland. The maps were compiled by the author from the data published by Dr John Beddoe in his classic work *The Races of Britain* (1885). The map indicates five zones of hair color. These range from a light-haired region (20 to 30 per cent dark-haired) along the east coast of England and Scotland and extending throughout Yorkshire and Northumbria to two dark-haired regions (60 to 70 per cent dark-haired) in south Wales and along the west coast of Ireland. Eye color is distributed into six zones. These range from two very-light-eyed regions (only 10 to 15 per cent dark-eyed) in northwest Scotland and southeast Ireland to two dark-eyed regions (35 to 40 per cent dark-eyed) in northwest and south Wales. Map 6 shows the relation between dark hair and light eyes in the British Isles. The greatest excess of dark hair over light eyes is found in the western part of Ireland.

It is noteworthy that in the eastern part of Britain even the old, native races of cattle are mostly black, while those of drier, east England are mostly brown. On the other hand, many north Russian populations—living in a continental cold-dry environment—show the opposite pigmentation relations: relatively more pigment in the skin and eyes than in the hair. The whole pattern shows a

remarkable parallel to the relations among warm-blooded animals under similar conditions—the Gloger-Görnitz “rule of climate.” A purely local exception to this is the case of the Czechs, who are darker-haired than their environment but not darker-eyed.

This *depigmentation* of the White Race, which becomes ever greater as one moves northward, is clearly shown on Map 1. It occurs to approximately the same degree for skin color, eye color, and hair color. It is generally a true textbook example of a “cline” in man in the sense of Julian Huxley. The clinal distribution of pigmentation extends from the Sudan in Africa and the Deccan region of India in the south up to Scandinavia and the eastern Baltic lands in the north.

STATURE

The variation of the other “racial traits” (stature, cephalic index, *et al.*) does not show the same striking regional distribution as in the case of pigmentation. Map 7, which depicts the distribution of the stature of adult males in Europe around 1940, is quite variegated. There are five zones in Europe ranging from an adult male mean of 160 cm. and under to a mean of 172 cm. and over. For a long time the tallest people in Europe have been the peoples of northwest Europe—inhabiting a zone extending from Ireland in the west to Estonia in the east. This zone comprises the peoples of England, Scotland, Ireland, Iceland, Norway, Sweden, Denmark, Holland, northwest Germany, western Finland, Estonia, and Latvia. A second area of tall stature—geographically isolated from the northern zone—is to be found in northern and central Yugoslavia. Almost the entire Ukraine lies close to these high values for mean stature.

The Scandinavian and Finnish Lapps are among the shortest peoples in Europe. Reliable data from earlier times record an adult male mean of 155 cm. and under for the Lapps. Short stature is also found among many Finnic peoples inhabiting northern Russia. The many mostly poorer mountain-dwellers of south and southwest Europe are also characterized by short stature—especially on the island of Sardinia, and also in the Spanish plateau region. In earlier times the greater part of Poland (1919-1939) and central Russia were regions of short stature.

Already this brief compilation shows a certain correlation between stature and living conditions. The inhabitants of the sub-polar region and the likewise almost as poor Mediterranean mountain-landers are reduced in stature compared to the well-to-do coast-landers of the North Sea region. Map 8 shows the distribution of stature in the Iberian peninsula. The tallest people are the Basques in northern Spain. The shortest people are to be found in the plateau regions of central, western, and northwest Spain. The regional differences in stature in the whole Iberian peninsula appear to be predominantly environmentally conditioned.

However, the Yugoslav province of Montenegro—which is just as barren and under-developed as Sardinia—harbors one of the tallest populations in Europe, if not in the world. The mean stature of adult males is 178 cm. and above. On the other hand, several prosperous central European populations are barely medium tall.

Furthermore, in the last 100 years there has been a significant increase in stature in Europe parallel with the increase in living standards. At present the increase in stature has been most pronounced in northwest Europe. In Sweden, for example, the mean stature has increased some 10 cm. from 1840 to 1965. On the other hand, on the Spanish peninsula, which until recently has remained economically under-developed, the change in stature at that time was almost zero.

Despite these secular increases in stature in various parts of Europe, the overall regional differences in mean stature have remained unchanged to a high degree. In Italy and the Netherlands, the north-south difference in mean stature has increased around 4 cm. in the last 70 to 80 years. This is due to the greater increase in stature in the northern parts of these countries. The Ukraine has become still taller (1 to 1.5 cm.) than central Russia in the past 40 to 50 years.

This increase in stature is primarily due to a more rapid and strong growth during youth. It concerns above all the limbs, so that the individuals become slenderer. This results in a lower Rohrer Index, while the Kaup Index remains unchanged. In addition, it now appears to have been demonstrated that in north and central Europe the long individuals are physically more early-maturing. In comparison, in Great Britain the increase in stature belongs entirely to the last generations, if one excludes some previously under-nourished worker populations.

To a certain degree the individual differences in physical strength in the struggle for existence in earlier times should be a factor in the present distribution of the races of Europe. Thus, physically smaller peoples are forced into waste regions by larger peoples. Evidently, this was the case with the Lapps. However, in medieval and later times many large Dinaric peoples in the Balkans were pushed back into poor, barren regions by the physically smaller, but military-technically predominant, Byzantine Greeks, Turks, and Hungarians.

Unfortunately we do not possess sufficient information about the Rohrer Index and the Kaup Index to depict their geographical distribution at this time.

HEAD FORM—CEPHALIC INDEX

Let us now turn to differences in head form in Europe. The European distribution of one measure of head form—cephalic index or breadth-length index of the head—is shown in Map 9. In

the case of this anthropological trait also, significant regional differences exist. We find dolichocephalic or long-headed peoples above all in northwest Europe (Scandinavia and the British Isles) and southwest Europe (Iberia, southern Italy, and the east Mediterranean islands). In Sweden a mean cephalic index of around 74 is found in certain localities—which may be a European minimum.

In comparison, brachycephalic or round-headed peoples are found in a wide zone through central Europe. This zone extends from Les Landes on the Bay of Biscay across the French central plateau region, the western Alps, northern Italy, up to Yugoslavia and Hungary, and then northwards over the western Carpathians to Silesia and south Poland. In central France in the nineteenth century, the European maximum was probably attained with a mean cephalic index of around 90 in places. One noteworthy exception to this central European zone of brachycephaly is the population of Geneva, Switzerland. Since the Middle Ages the Genevans have been continually mesocephalic.

Moving further east, brachycephaly or round-headedness is somewhat less strongly pronounced in Russia. The cephalic index declines here and there—for example, around the lower reaches of the Don River and among the Volga Finns—to mesocephalic values. On the other hand, the Lapps are brachycephalic. We also find a rather large isolated region of long-headedness or dolichocephaly in the eastern parts of the Balkan peninsula (Bulgaria and northeastern Greece).

Correlations between economic conditions and head form (as measured by the cephalic index) can be established to a lesser degree than in the case of stature. We still often find rounder-headed or more brachycephalic populations in the mountainous regions of Europe—the French Central-Massif, the Alps, the Carpathians, the west Balkans, Lappland, and so on. However, the central European zone of round-headedness terminates sharply defined at the *northern base* of the Pyrénées mountains. In the eastern Balkans the mountain-dwellers are still more long-headed or dolichocephalic than the people of the surrounding areas. In southern Norway the round-headed zone is concentrated entirely in the western coastal region.

Furthermore, we have at present no similar changes in cephalic index which are environmentally conditioned as in the case of stature. In general, the degree of brachycephaly or round-headedness of the local residents in large parts of Europe now appears to be declining again. Thus, in parts of France, such as the Savoy region, the mean cephalic index decreased from 87 around 1830 to 84 in 1950. Similar declines have been observed among the Swiss and the Norwegians. On the other hand, during the earlier modern times and in the Middle Ages a more or less pronounced change in the opposite direction took place almost everywhere in Europe. This

contrasts also with the much lower mean value of the cephalic index found in Europe at the end of the Neolithic period.

In central Europe the increase in mean cephalic index from the early Middle Ages to the nineteenth century was extremely pronounced. For example, in Bavaria the proportion of the population classified as brachycephalic or round-headed increased from some 30 per cent to 80-90 per cent during this time period. In northwest Germany the change was from about 20 per cent more than 50 per cent during the same time. The trend towards a greater degree of brachycephaly still continues in parts of Poland (Lasota) and Rumania (Necrasow). This trend has naturally been much less pronounced in those regions of Europe which are presently still dolichocephalic or long-headed. In fact, in central Sweden there has been no change at all over time in mean cephalic index.

How does one explain these changes in head form? The relatively small decrease in mean cephalic index in recent times is probably connected with the stronger and quicker growth in youth. At this age period the head often becomes somewhat relatively longer-formed. In parts of Switzerland and other regions of Europe, the disappearance of cretinism and other conditions, produced by the importation of iodine, etc., is partly responsible for changes in population values of head form.

But what about the great increase in cephalic index in the Middle Ages and later periods? We still do not know to what degree environment, hereditary changes, and selection were factors in this change in head form. The economic conditions of the lower classes in Europe evidently deteriorated in many ways during this time period. This was due to a sharp increase in population, long-lasting and destructive wars, and intensified pressure of the nobility upon the serfs. Moreover, in this time pronounced hereditary changes were being established. In part this was associated with a rearrangement (through selection) of the hereditary composition of the population.

The changes appear to have tended toward a later-maturing and less-assuming type—predominantly of the Alpine race. This type could have had relatively better chances for reproduction and survival during the time of war, scarcity, and pestilence (such as the Black Death around 1350) than the more-assuming and earlier-maturing type—more of the Nordic race.

The round-headed mountain dwellers also suffered less in their protected location during the serious troubles of the land.* Thus, these peoples could later partly settle the rich plains devastated by war and plague.

However, all the above is *in no way* a sufficient explanation of the change in cephalic index. For in the past two millennia a similar change in head form is very often observable among Mongolid

* But in Scotland the mountain dwellers are long-skulled.—EDITOR.

populations. It also occurred among Europid peoples living in the colder regions of Europe, but not among Europids of the warmer regions. Perhaps this is *one* of the causes of the sound shift in the south German language which set in at about the same time.

HEAD FORM—OTHER INDICES

Let us now turn to two other racial characteristics, which obviously have the greatest significance for deciphering the migrations and mixtures of races. For these traits—as far as we can determine—are completely constant or independent of the environment. They evidently show almost no hereditary changes in historical times.

The first anthropological trait is the relation of the height to the length of the cranium—expressed as the Height-Length Index (H.L.I.). This is not measureable on living subjects. Map 11 shows the distribution of this index in Europe in modern times. The Height-Length Index indicates three zones in Europe. These range from a region of low-vaulted crania in West Europe (the British Isles, Scandinavia, Germany, France, and northern Spain) to a region of high-vaulted crania in the western Balkans and Anatolia.

Since the heads (crania) often became shorter and wider in the Middle Ages, the height of the cranium also diminished somewhat. In this way the *relation* of the height to the length of the cranium remained almost unchanged. Map 12 shows how remarkably similar have been the zones indicating the distribution of the height-length index in Europe from the end of the Neolithic Period through the Iron Age to modern times.

The boundary between the low-skulled West Europe—from northern Norway down to northern Portugal—and the high-skulled central region of Europe is up until our time often rather sharply defined. Still more sharply defined is the border between the high-skulled Europid populations of eastern Europe and southwest Asia and the low-skulled Mongolid populations of northern and central Asia. The small low-skulled enclaves in the Magyar Pussta region and among the Transsylvanian Szeklers indicate stronger and later Mongolid strains. Likewise, the similar low-vaulted crania of the eastern Lapps (in northern Finland) indicates Mongolid admixture among these people.

On the other hand, the continuous region of high-vaulted crania across southern Russia shows how relatively little Mongolid blood infiltrated this part of Europe. There is also a high-skulled region in the southern half of the Spanish peninsula. This is evidently connected with similar regions in the Sahara of North Africa. The Sierra Nevada region of southernmost Spain and the Atlas Mountain area of northern Morocco, however, are more low-skulled.

The second anthropological trait is the relation of the height to the breadth of the cranium—expressed as the Height-Breadth Index (H.B.I.). For the geographical distribution of the Height-Breadth Index, we have only an older map constructed by the author in 1939 and subsequently modified. Map 13 shows the distribution of this index in Europe with three zones indicated. These range from a region of low-broad crania in western Germany, Belgium, France, and northern Spain to a region of high-narrow crania in southeastern Finland, the southeast Balkans, southern Spain and the Mediterranean islands, and across North Africa.

BLOOD GROUPS

The distribution of the alleles of the human blood groups in Europe also shows marked regional variations, which are of great interest to anthropologists. This distribution is certainly very old, since the mutation rate of the alleles is evidently very low. Unfortunately, we can study blood groups almost only on living subjects.

Serological studies show, for example, the almost total identity of blood group relations among the peoples of northern India and the Gypsies of Europe. Often such studies demonstrate the striking ‘Mongolic’—or rather eastern—blood-picture of the Magyar Pussta population and of the eastern Lapps. These allelic frequencies are consequently especially important to anthropologists, because they are almost the only anthropological traits which show directly the genetic differences between populations.

The European distribution of blood-allele p—the gene for blood type A in the ABO-System—is shown in Map 14. The p-gene attains its highest global frequency in Europe and Asia Minor. The maxima probably occur in Scandinavia and Finland, as well as in several central and south European regions. The most distant parts of northwestern and eastern Europe, together with southern Italy and the Mediterranean islands, show lower values for the p-gene. The European minimum is found in western Ireland with a gene frequency of less than 15 per cent.

It is also interesting that low p-values (20 per cent or less) are found in several refuge areas of Europe—among the Basques, in the marsh and moor regions of the Netherlands, in the Po delta region of northeastern Italy, and in some forest regions of central Sweden. This probably means that large parts of the western half of Europe may have had lower p-gene frequencies—i.e., smaller proportions of blood type A—in earlier or prehistoric times. The higher p-frequencies may have been first diffused by Indo-European agricultural tribes from southeast Europe. Moreover, in central Europe there is no difference in p-gene frequency between the predominantly Nordic and the predominantly Alpine regions.

The high p-value in the greatest part of the Iberian peninsula is noteworthy. The isolated Castilian boundary-mountain regions attain p-values bordering on the world-maximum—up to at least 50 per cent. These high p-values are found in both the low-skulled and the high-skulled regions of Spain, but not among the living Basques or in the surrounding areas which were once Basque-speaking. The Spanish blood-group relations are also noteworthy in regard to the much lower p-values in all the Europic parts of northwest Africa.

The particularly high p-values of the Lapps—both the eastern and western groups—evidently have a special history. For among these people the rare P_2 -group (for blood type A_2) predominates over the more common p_1 -group (for blood type A_1) to the highest degree by far in the entire world.

The European distribution of blood-allele r—the gene for blood type O in the ABO-System—is shown in Map 16. The distribution of this allele shows many interesting features. The maxima for the r-gene in Europe are attained in the above-named relatively low-p regions in the western half of the continent. In western Ireland r-frequencies of 80 per cent or more are found. In eastern Europe—and among all the Lapp groups—the r-gene is much more weakly represented. The percentage values are up to 50 per cent in these populations.

The somewhat isolated region of East Karelia in northwestern European Russia shows very divergent blood group proportions: high q, moderate r, but very low p. These proportions are found among the Finns as well as among the Russians who have been living in this region since olden times. In total these blood group proportions are almost “East Siberian” values. However, they are probably only the result of “genetic drift” among this still partially isolated population with a very weak degree of Mongolid admixture.

The European distribution of blood-allele q—the gene for blood type B in the ABO-System—is shown in Map 15. The distribution of this allele is of special interest to us. In almost all East Europe north of the Danube River and to the west approximately to the Finnish-Scandinavian and the German-Slavic linguistic boundaries (as of the year 1900), we find a higher q-frequency together with a greater proportion of high-skulled crania. West of the Adriatic and the eastern Alps, however, the high-skulled regions are low in the q-gene. In southern Spain we find medium q-values, together with long-high crania.

The Lapp groups show completely contrary blood and cranial relations. The Skando-Lapps are high-skulled, but very low in the q-gene. On the other hand, the East Lapps are low-skulled and high in the q-gene. These still little known relationships are also very unique from a racial-physiological standpoint (L. Beckman).

The higher q-value—i.e., higher frequency of blood type B—in

East Europe is evidently caused by Mongolid blood only to the slightest degree (remember the above description of the distribution of cranial height in East European Euroid and north Asian Mongolid populations). The q-value is just as high in Estonia and West Poland as around the Moscow region of Russia. In both areas the q-value is somewhat higher than in the central Ukraine. Naturally, these blood-group patterns are incompatible with an exclusively Mongolid source for the higher frequency of blood type B in East Europe. This higher q-value is thus far older and characteristic of many eastern Euroid races.

Furthermore, the almost completely Mongol-free Euroid peoples of northern India have just as high q-gene frequencies as the Central Asiatic Mongolids.* The sharp decline in q-value at the German-West-Slavic language boundary up until our time shows how old must be this anthropological difference. It dates back, at least, to before 1000 A.D.

The relations of the other blood group systems are even in Europe barely sufficiently known in detail. In the MN-system, the proportion of blood type M declines rather uniformly from east Europe to west Europe. However, as a purely local exception very high M values are found on the island of Sardinia. With regard to the Rh-System, low frequencies of "Rh-negative" individuals are found among the Lapps, the Sardinians, and the Galicians of Spain. Among the Basques, however, the frequency of Rh-negatives is relatively high.

Unfortunately, the geographical distribution of other important anthropological traits—body form, facial index, nasal index—cannot be treated within the scope of this paper. Some of these traits are insufficiently known as to their geographical variability. Other of these traits show no great regional contrasts.

SUMMARY

Europe is the original homeland of the bulk of the White or Euroid race and most of its pronounced subraces. Within this area sufficient data are available to map the geographical distribution of some of the most important anthropological traits and to investigate the causes of these regional variations. In this paper the distribution in Europe of pigmentation—skin color, hair color, and eye color—stature, head form, and blood groups was reviewed and analyzed.

Skin color in Europe varies from dark-brown in the south to rosy white in the northwest. Hair color and eye color show parallel regional variations—ranging from light-mixed hair and light eyes across northern Europe to dark hair and dark eyes in the regions

* However, Mongol types are found, especially in northeast India.

bordering the Mediterranean Sea. The peoples of the western areas of Great Britain and Ireland show a much darker pigmentation of the hair than of the skin and eyes, while the opposite pattern is found among many north Russian populations. Pigmentation among the Europid or White race appears to have been extensively adapted to the different climatic conditions found throughout the continent. The most strongly depigmented Europid races are found in the cool-damp northwest part of the continent.

The distribution of stature in Europe also exhibits regional variations—although not to the same extent as pigmentation. The tallest people in Europe are the peoples of northwest Europe—inhabiting a zone extending from Ireland in the west to Estonia in the east. A second area of tall stature is to be found in northern and central Yugoslavia. The shortest people in Europe are the Scandinavian and Finnish Lapps in the far north of Europe and the inhabitants of the poorer, mountainous regions of south and southwest Europe and the Mediterranean islands—especially Sardinia.

The distribution of stature appears to be partially correlated with living conditions, so that the shorter populations are frequently found in the economically under-developed regions of the continent. However, the inhabitants of the poor, mountainous regions of central Yugoslavia are among the tallest people in Europe, if not the world. There has been a pronounced secular increase in stature during the last century in many parts of Europe. This increase has paralleled the rise in living standards in these areas. However, regional differences in stature within nations have been maintained despite the overall increase in stature.

Head form was measured by three indices—the breadth-length index (or cephalic index on the living), the height-length index, and the height-breadth index. Each of these indices shows regional variations throughout the European continent. The breadth-length index shows two zones of long-headedness or dolichocephaly in northwestern and southwestern Europe and a zone of round-headedness across central Europe.

From the Middle Ages through the nineteenth century there has been a pronounced trend toward a greater degree of round-headedness or brachycephaly in many parts of Europe. This is reflected in a higher mean cephalic index or breadth-length index over time in these regions, although in the nineteenth century there has been a moderate reversal of this trend. Environmental, hereditary and selective factors may be involved in varying degrees in these changes in head form.

The height-length index shows Europe divided into a hypsicephalic or high-skulled East and a chamaecephalic or low-skulled West. The high-skulled zone comprises most of Russia and eastern Europe, the Balkans, Italy and most of Spain. The low-skulled zone includes the British Isles, Scandinavia, the Low Countries,

Germany, France, northern Spain, and the Mediterranean Islands. This index appears to be environmentally constant and shows little or no change within historical times. The height-breadth index shows a region of low-broad skulls in western Germany, France, and northern Spain and a region of low-long skulls in southeastern Finland, northeastern European Russia, the eastern Balkans, southern Spain, and the Mediterranean islands.

The geographical distribution of the various blood group systems is of interest to anthropologists as a possible aid in tracing earlier migrations and mixtures of races. Blood groups are completely hereditarily determined, have a known mode of inheritance, and can be translated into gene frequencies. The p-gene—for blood type A—attains higher frequencies in Europe than in most other areas of the world. The European maxima are found among the Scandinavian and Finnish Lapps and in west central Spain. Lower p-frequencies are found in the Celtic regions of the British Isles (Scotland, Wales, and Ireland) and among the Basques. The q-gene—for blood type B—declines in frequency from eastern Europe to western Europe. There is a sharp drop in q-values at the Scandinavian-Finnish and German-West-Slavic language boundaries. The r-gene—for blood type O—attains its highest frequencies in refuge areas and among peoples in the westernmost parts of Europe—the Basques, Irish, Scotch, and Icelanders. The percentage of Rh-negative individuals is higher than average among the Basques and lower than average among the Lapps and Sardinians.

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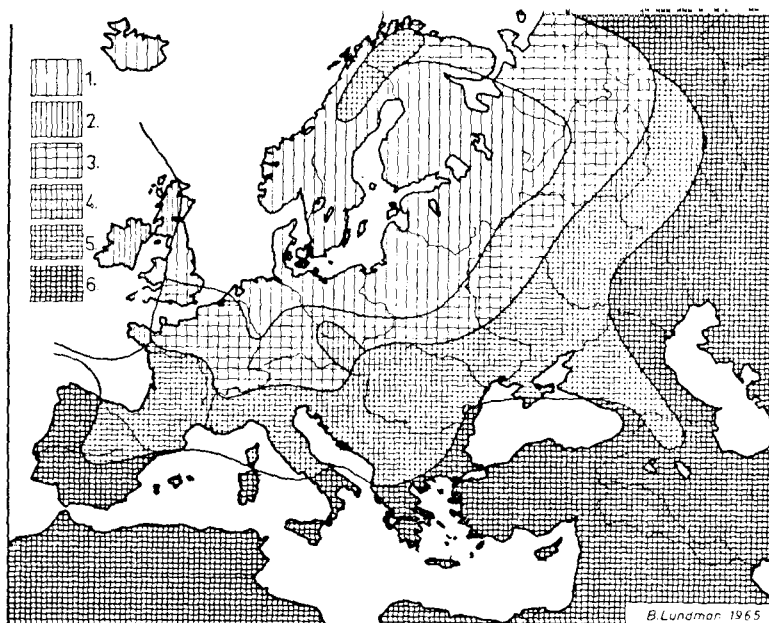
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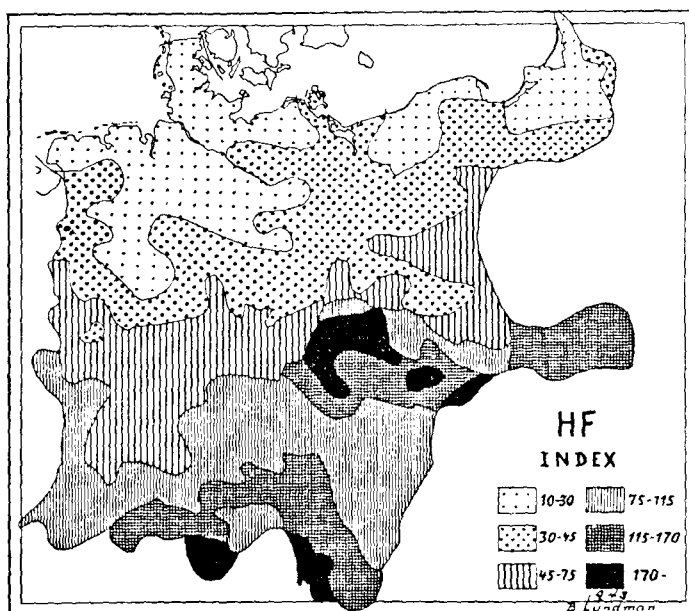
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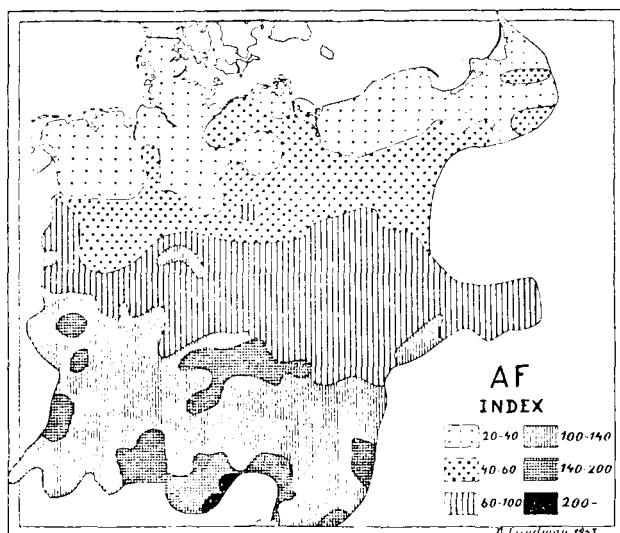
MAP 1—The distribution of hair color and eye color in Europe (Lundman, 1963—according to Ripley, 1900 and Struck, 1922).

Legend—1. Light-mixed hair and light eyes; 2. Dark-mixed hair and light eyes; 3. Light-mixed hair and light-mixed eyes; 4. Dark-mixed hair and light-mixed eyes; 5. Dark-mixed hair and dark-mixed eyes; 6. Dark hair and dark eyes.



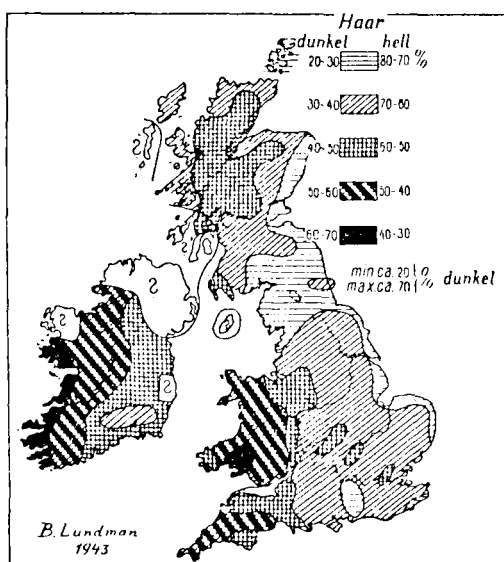
MAP 2—The distribution of hair color in Central Europe (Lundman, 1943—according to the original reports of the great "Central European School Children Investigation" by Virchow, 1876; Kollmann, 1881; Schimmer, 1884; and other sources).

Hair Color Index (Haarfarbe Index) = Number of dark-haired school children per 100 light-haired school children.



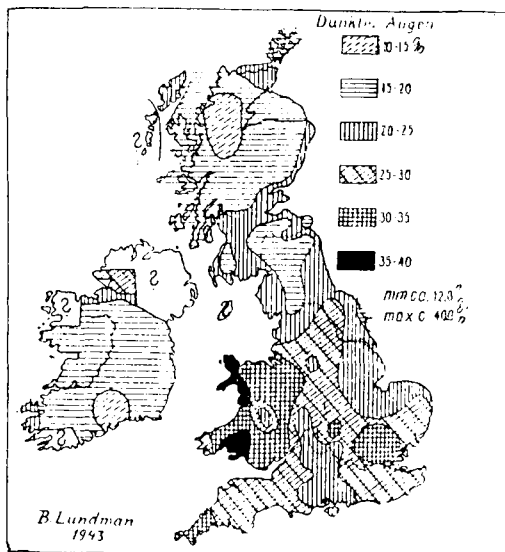
MAP 3—The distribution of eye color in Central Europe (Lundman, 1943—according to the original reports of the great "Central European School Children Investigation" by Virchow, 1876; Kollman, 1881; Schimmer, 1884; and other sources).

Eye Color Index (Augenfarbe Index) = Number of dark-eyed school children per 100 light-eyed school children.



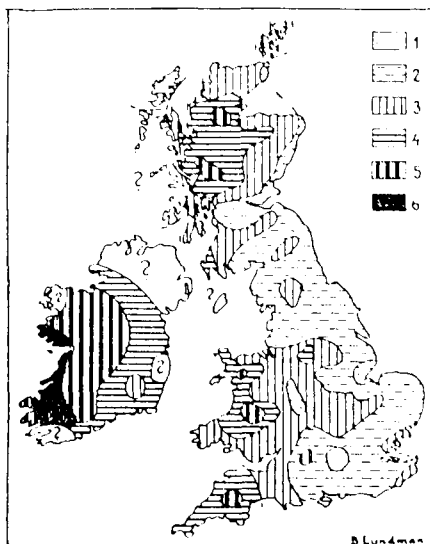
MAP 4—The distribution of hair color in Great Britain and Ireland (Lundman, 1936)—according to the tables compiled by Beddoe, 1885).

Legend—20-30 = 20 to 30 per cent dark-haired; 30-40 = 30 to 40 per cent dark-haired; 40-50 = 40 to 50 per cent dark-haired; 50-60 = 50 to 60 per cent dark-haired; 60-70 = 60 to 70 per cent dark-haired.



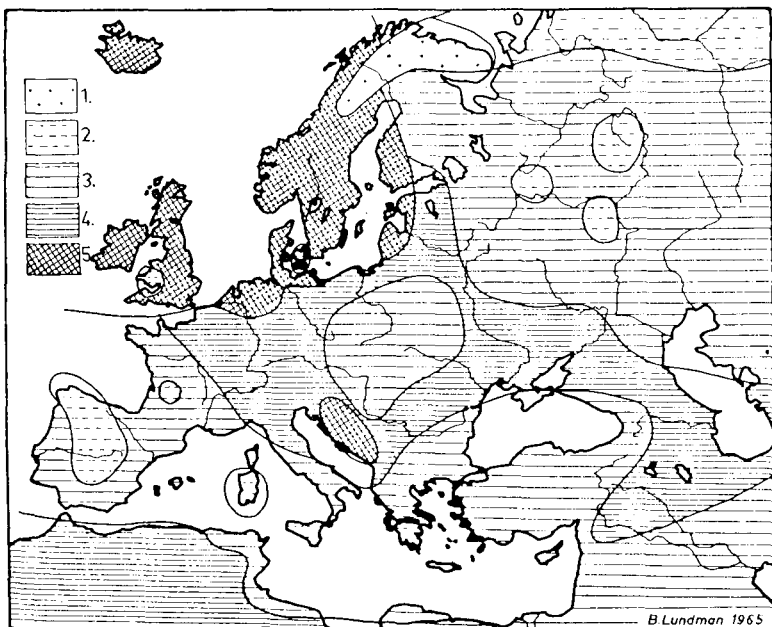
MAP 5—The distribution of eye color in Great Britain and Ireland (Lundman, 1936—according to the tables compiled by Beddoe, 1885).

Legend—10-15 = 10 to 15 per cent dark-eyed; 15-20 = 15 to 20 per cent dark-eyed; 20-25 = 20 to 25 per cent dark-eyed; 25-30 = 25 to 30 per cent dark-eyed; 30-35 = 30 to 35 per cent dark-eyed; 35-40 = 35 to 40 per cent dark-eyed.



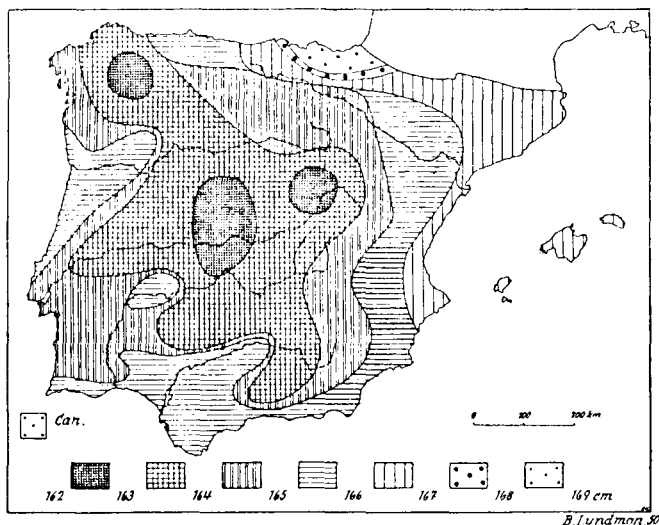
MAP 6—The relation between dark hair and light eyes in Great Britain and Ireland (Lundman, 1936—according to the tables compiled by Beddoe, 1885).

The map colors from 1 to 6 indicate an increasing excess of dark hair over light eyes.



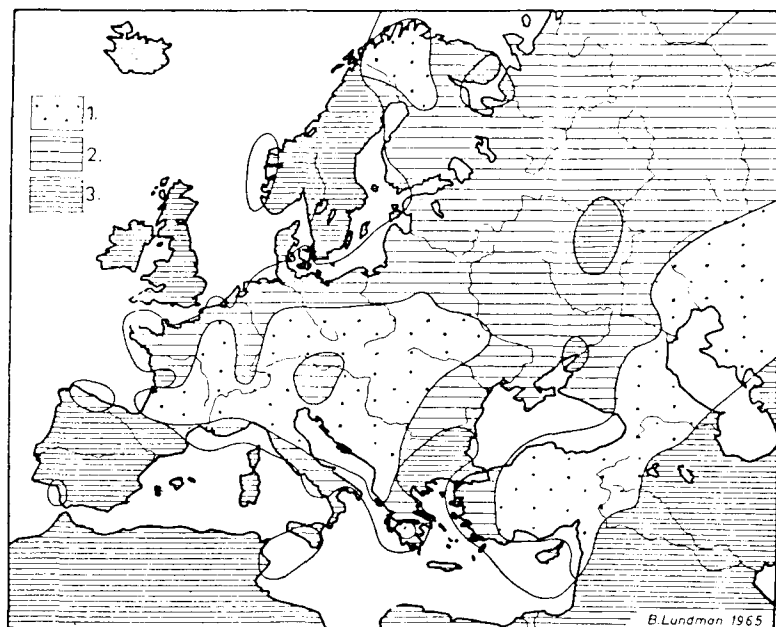
MAP 7—The distribution of adult male stature in Europe around 1940 (Lundman, 1943—based in part on Struck, 1922 and supplemented by Lundman in 1952, 1963 and 1965).

Legend—1. 160 cm. and under; 2. 160-164 cm.; 3. 164-168 cm.; 4. 168-172 cm.; 5. 172 cm. and over.



MAP 8—The distribution of stature in the Iberian Peninsula (Lundman, 1950—according to the official Spanish military statistics for 1927 and to Tamagnini, 1932 for Portugal).

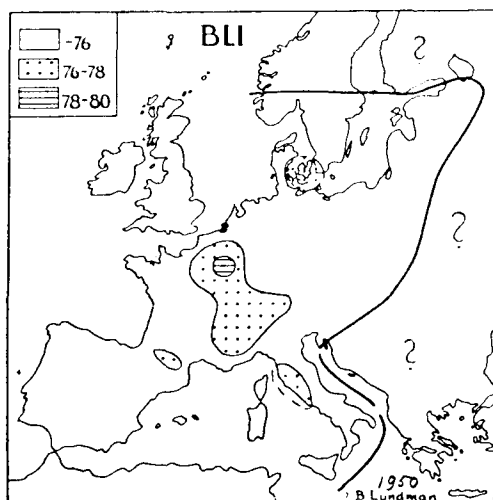
Legend—162 = 162-163 cm. and under; 163 = 163-164 cm.; 164 = 164-165 cm.; 165 = 165-166 cm.; 166 = 166-167 cm.; 167 = 167-168 cm.; 168 = 168-169 cm. and over.



MAP 9—The distribution of the breadth-length index of the head (cephalic index) in Europe (Lundman, 1943).

$$\text{Cephalic index (C.I.)} = \frac{\text{Breadth of head}}{\text{Length of head}} \times 100.$$

Legend—1. Round-headed (brachycephalic): C.I. = 83 and over; 2. Medium-headed (mesocephalic): C.I. = 80-82; 3. Long-headed (dolichocephalic): C.I. = 79 and under.

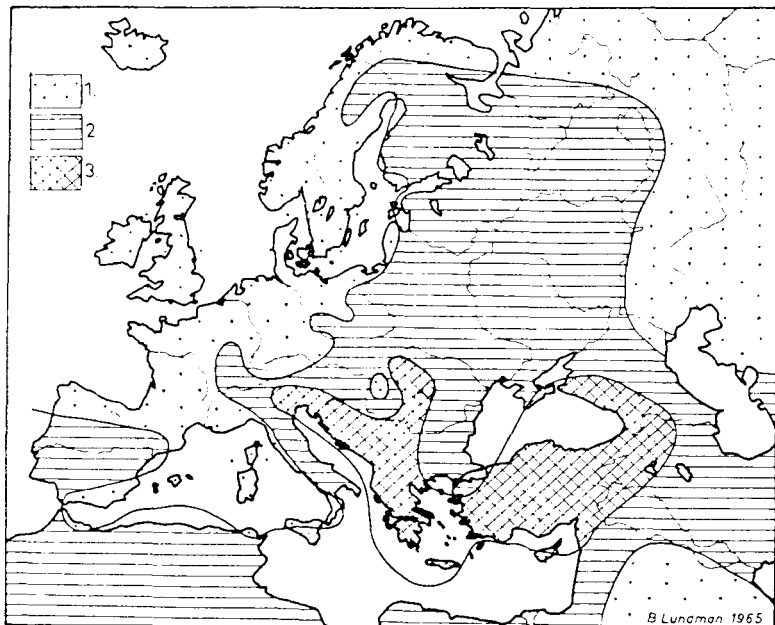


MAP 10—The distribution of the breadth-length index of the skull (cranial index) in Europe at the end of the Neolithic Period* (Lundman, 1943—according to the tables compiled by Scheidt, 1924; and other sources).

$$\text{Cranial index (C.I.)} = \frac{\text{Breadth of skull}}{\text{Length of skull}} \times 100.$$

Legend— -76 = Cranial index of 76 and under; 76-78 = Cranial index of 76-78; 78-80 = Cranial index of 78-80.

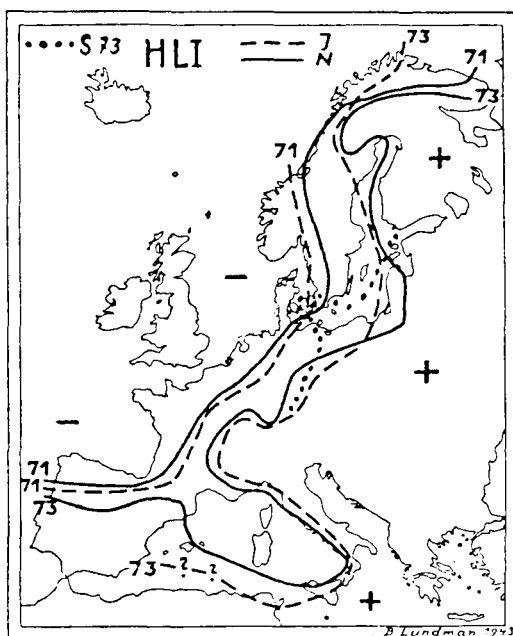
*The migrating Bell-Beaker people are *not* included on the map.



MAP 11—The distribution of the height-length index of the skull in Europe in modern times (Lundman, 1943).

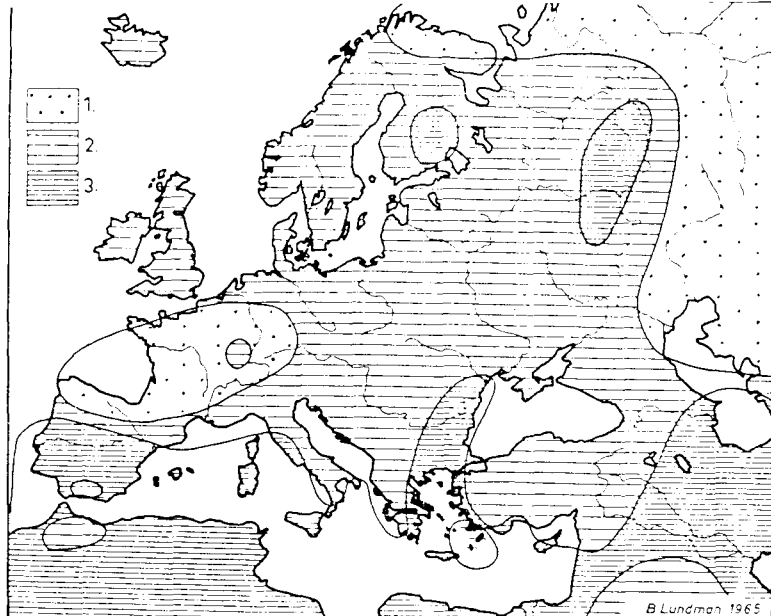
$$\text{Height-length index (H.L.I.)} = \frac{\text{Height of skull}}{\text{Breadth of skull}} \times 100.$$

Legend—1. Low-skulled (chamaecephalic): H.L.I. = 73 and under; 2. Medium-skulled (orthocephalic): H.L.I. = 73-76; 3. High-skulled (hypsicephalic): H.L.I. = 76 and over.



MAP 12—The distribution of the height-length index of the skull in Europe at different time periods (Lundman, 1943).

S = End of the Neolithic Period; I = Iron Age; N = Modern Times.



MAP 13—The distribution of the height-breadth index of the skull in Europe (Lundman, 1939).

$$\text{Height-breadth index (H.B.I.)} = \frac{\text{Height of skull}}{\text{Breadth of skull}} \times 100.$$

Legend—1. Low-broad skulled: H.B.I. = 90 and under; 2. Medium-skulled: H.B.I. = 90-95; 3. High-skulled: H.B.I. = 95 and over.



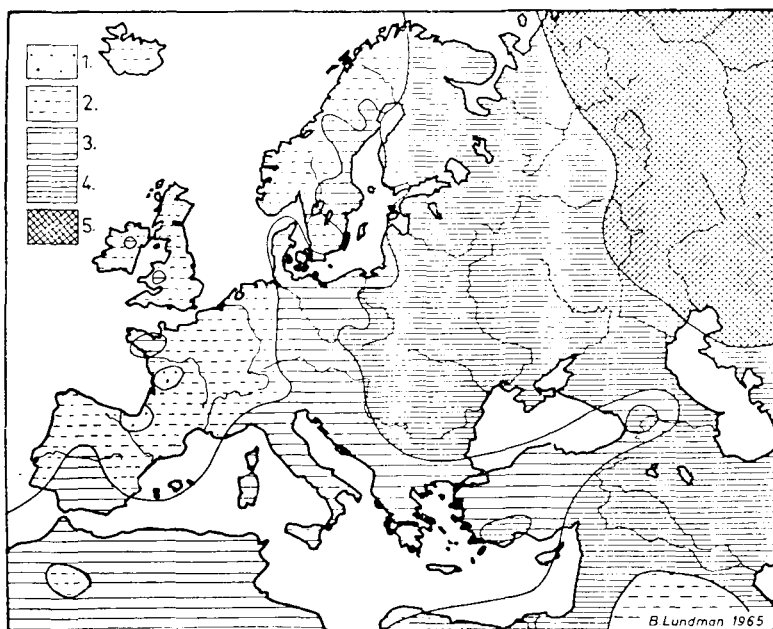
MAP 14—The percentage distribution of blood-allele p in the ABO-System in Europe* (Lundman, 1963—according to Mourant, 1958).

Legend—1. 15 per cent or less; 2. 15 to 25 per cent; 3. 25 to 40 per cent; 4. 40 per cent or more.

* The frequency of the p gene can be derived from the ABO-phenotypes by the following formula:

$$p = \frac{A + O}{2}$$

ELECTRONIC REPRODUCTION PROHIBITED

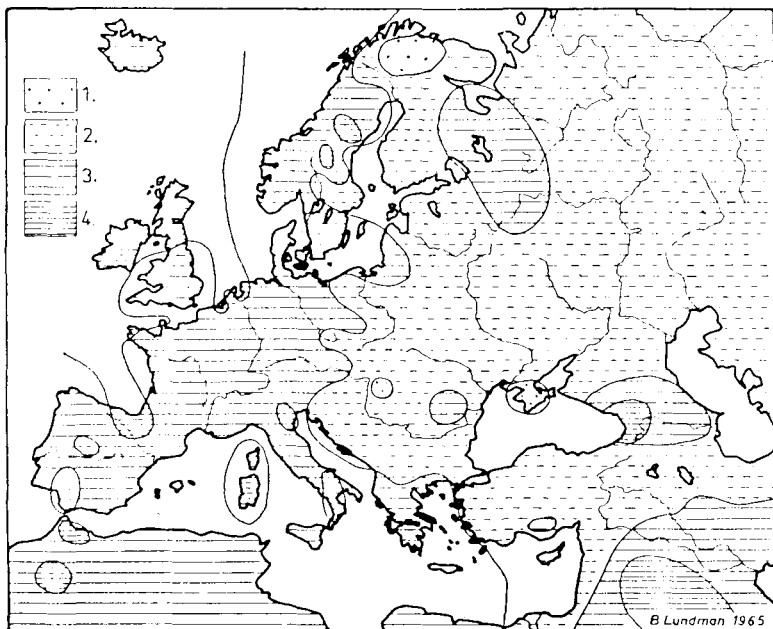


MAP 15—The percentage distribution of blood-allele *q* in the ABO-System in Europe* (Lundman, 1963—according to Mourant, 1958).

Legend—1. 3 per cent or less; 2. 3 to 7 per cent; 3. 7 to 12 per cent; 4. 12 to 20 per cent; 5. 20 per cent or more.

* The frequency of the *q* gene can be derived from the ABO-phenotypes by the following formula:

$$q = \sqrt{B + O} - \sqrt{O}$$



MAP 16—The percentage distribution of blood-allele *r* in the ABO-System in Europe* (Lundman, 1963—according to Mourant, 1958).

Legend—1. 50 per cent or less; 2. 50 to 60 per cent; 3. 60 to 70 per cent; 4. 70 per cent or more.

* The frequency of the *r* gene can be derived from the ABO-phenotypes by the following formula:

$$r = \sqrt{O}$$

Trial by Ordeal in Lundazi

By C. J. W. FLEMING

HISTORICAL INTRODUCTION

The Lundazi district lies in the north-eastern part of Zambia (formerly Northern Rhodesia) roughly between latitudes 11° and 13° south; it is a long, rather narrow stretch of country some 10,000 square miles in extent, bounded on the east by Malawi and on the west by the Luangwa River and the northern extremities of the Muchinga escarpment. It is a typical piece of Central African countryside which is as yet little touched by civilization. At one time it was thinly occupied by Tumbuka tribesmen but sometime early in the eighteenth century it began to receive the attention of other tribes. First the south and south-eastern portion of the area was taken over by the Chewa moving in from the south and south-west, and, shortly after, the north-western portion on the upper reaches of the Luangwa was occupied by immigrants from the Luba country, adjacent to present day Zaire, the forebears of the present Senga chiefs living there. They were followed by Kamanga infiltrating from Northern Malawi and, finally, the whole district was overrun and partially settled by Zwangendaba's Angoni in the middle of the nineteenth century. As will be observed, it presents an ethnological mosaic, fairly reflecting the many tribal movements which have taken place in recent times.

Turning now to the use of the ordeal in judicial proceedings in Lundazi, it is true to say that man has engaged in litigation from the dawn of history and that ever since he has been so engaged he has been faced with the problem of determining where the truth lies in cases in which there are disputed facts. The problem is still with us. In the ordinary way in primitive society disputes are settled by a resort to private war or similar methods or, in the great majority of cases, simply by arbitration tribunals in which the facts are established by oral testimony virtually untrammelled by any rules of evidence. There were however some matters which were treated differently. It is hard to say why precisely this was so. It is possible to surmise however that the matters in question were regarded as so serious or so susceptible to magical influences that it was necessary to resort to the occult to discover the real truth. One of these matters is what is loosely called witchcraft, that is secret killing either by non-natural means or means not known to the community at large, and another was adultery with a married woman. This anyway was the situation in Lundazi before the British occupation, for it was universally believed that certain drugs had the property of being able to expose the guilt of a person who, on being charged with one or other of these offences, falsely swore that he was innocent.

It is interesting to note in passing that trial by ordeal was known to many early systems of law. It was apparently practised by the Hebrews, there is a hint of it in the earliest Roman Law and it was a common way of discovering the truth among the early Germans. Mr Justice Wessels records no less than seven forms the ordeal took in Holland in early times. According to Pollock and Maitland it was also well known in England and in the Arthurian legend Queen Guinevere was tried by ordeal for allegedly murdering Sir Patrice. It went out of favour in England after it was denounced by the Lateran Council in 1216 but even so trial by battle was only finally abolished in 1819 by the statute 59, Geo. III c. 46.

THE ORDEAL IN LUNDAZI

Informants say that in the days before the arrival of the Angoni the right to administer the poison ordeal was the sole prerogative of chiefs, and commoners were not permitted to perform it themselves. This is certainly in accordance with the general custom that chiefs were the depositories of most of the charms and medicines associated with political power, such as those required for rainmaking, for the girls' initiation ceremony and, among the Chewa, the Nyau secret society. This is also the view of Moggridge but it is not supported by Cullen Young who thinks it belonged to the group headman or Moir who ascribes it to the medicine-man. This divergence of opinion may in part be due to the fact that the Angoni invaders did not know about the poison ordeal in their native Zululand and, although they readily adopted it, they did not regard its use as being the particular prerogative of chiefs. In what follows it is the institution as it was practised by the indigenous peoples in areas not affected by Angoni influence that is considered.

In Lundazi itself the ordeal took two forms, the *mwavi* poison ordeal and the boiling-water test. It is proposed to deal with the poison ordeal first. The *mwavi* tree, the bark of which was used for the test, is known to science as *erythrophleum suaveolens* and occurs widely in tropical Africa from Senegal to the Sudan and southwards to Zambia, Malawi, Rhodesia and Mozambique. It prefers riverine lowlands at altitudes ranging from sea-level up to about 1100 metres. It grows to a height of 50 metres or more, it is said to produce a good timber-wood and has a rough bark which stains water red, hence its common name of "redwater" tree. The leaves and the pods are not toxic but the bark contains a number of complex alkaloid poisons including erythrophleine (C₂₄H₃₉O₅N) and cassaine. The effects of drinking an infusion prepared from the bark has been described as follows: "Typical digitalis-like cardiac action, paralysis of the respiratory centre, strong adrenalin-like blood-pressure increase, emetic action, diarrhoea with bloody stools, strong salivation, dyspnoea, uncertainty of movements, trembling of the extremities, thirst, headache, visual and general sensual disturbances

and depressing action on the cortex (except cassaine which has an exciting action), with temporary periods of excitation accompanied by tonic and clonic cramps. Death is due to cardiac and respiratory paralysis." It is not known why the action of the poison differs in different subjects but it has been suggested that this may be due either to the known variation of the toxicity of different samples of the bark or the possibility that, like strychnine, a particularly large dose tends to induce vomiting. Locally the tree occurs sparingly on the west bank of the Luangwa and it is common in the lake-shore regions of Lake Malawi, which was one of the principal sources of supply for Lundazi. It was well known to the early Portuguese settlers on the Zambezi and there are some highly coloured accounts of its properties in their writings. De Rezende, for instance, after having described how the "Kafirs took their oaths" with the bark of the tree avers that the tree itself is so poisonous that under it are to be found the corpses of many dead animals.

Before describing the test itself perhaps a word on extra-judicial uses of the drug would be appropriate as it has been claimed by some that it was a sanction in itself. Primarily the ordeal was used not to punish offenders but to determine in judicial proceedings if a person charged with an offence swore truly or falsely when he protested his innocence. However, as will be seen from what follows it was thought that the poison was inherently inimical to criminal conduct and the ordeal might therefore punish a person for an undisclosed crime committed previously. In so doing the poison may be said to have acted as a sanction. Another extra-judicial use of the bark has been mentioned by informants. It is said that when a chief wanted to know whether strangers asking for land on which to settle were desirable immigrants he was wont secretly to give their leader an infusion of the bark meanwhile charging the poison under his breath to disclose whether or not they were fugitive criminals. Coillard in his book mentions that Lewanika on one occasion admitted that some of his *indunas* had, in the same way, administered *mwavi* to proxies to discover the missionary's *bona fides*.

THE PRELIMINARIES

When the poison ordeal was used as a mode of judicial proof it was a bilateral test inasmuch as both complainant and defendant were required to submit themselves to the ordeal, the complainant swearing that the charge was true and the defendant that it was false. This was clearly more logical and more equitable than the unilateral form practised by many neighbouring tribes and, moreover, it had the effect of making the complainant and his family more careful in verifying the facts before launching out on a prosecution, for the ordeal could be a double-edged sword which might well rebound on the prosecutors themselves. The bilateral form brought complications however, for it opened up the possibility of

both parties being shown to have sworn falsely or both truly. Informants are reluctant to admit the possibility of both parties being shown to have sworn falsely. If there had been administration to the parties themselves or to human proxies and both parties or proxies died, then it was said that both participants must have been guilty of some crime and unless someone else was prepared to come forward and lay a fresh charge the matter was dropped. Where animal proxies had been used and both proxies died the failure to discriminate was attributed to the poison itself and a new trial with fresh poison was necessary. In the converse case, where both parties or both proxies survived, certain facts were established. The complainant proved that the offence had been committed, as alleged, but he failed to show that the defendant had committed it, while the defendant, for his part, established his innocence and he and his family were accordingly entitled to the extremely heavy damages which could be claimed for the wrongful prosecution of a capital charge. It was open in such a case for the complainant to indict someone else, or the court, it is said, might require the complainant's family-head to charge the defendant's family-head to discover whether or not, perchance, the wrongdoer was not another member of the latter's family.

The poison test was used almost exclusively for allegations of secret killing by unnatural means or *ufwite* as it was called. It might be performed either on the parties themselves or on proxies in the form of slaves, dogs and fowls. Where a family was convinced—usually as a result of divination by a doctor or *nganga*—that some outsider, that is someone outside the family, had caused the death of a member of the family clandestinely by unnatural means, it was up to the head of the family or some other member nominated by him formally to charge the accused with the offence of murder. If the accused on being charged admitted the offence there was no need for the ordeal, but, if he denied it, the truth could only be ascertained by recourse to the ordeal. It was a well-established rule of the customary law that guilt in these circumstances could not be proved by testimony alone, however strong the evidence, and moreover, as Cullen Young remarks, the right of an accused to undergo the ordeal where he had been falsely charged with a serious offence was one of the few rights accorded to the individual in the customary law. According to informants, if there was a denial of guilt, the next step was for the parties to approach one of the chief's *vilolo* (councillors), and request that he arrange for the test to take place. Every effort was made at this stage to induce the accused to confess lest worse befall and the language is full of sayings urging timely confession.

THE TRIAL

There was a certain amount of ceremonial surrounding the collection of the bark preparatory to staging the trial. Bark was

chipped off the tree and only those pieces falling face upwards were selected and, according to de Rezende, on the Zambezi it was gathered at dawn and the chosen tree was always approached from the east. Before the trial proper a pilot test was carried out on a special fowl to determine the strength of the potion. This fowl, known as the *nkuku ya ku longosola*, the indicator fowl, was provided by the court. For the experimental run some of the bark was mixed with a little water, pounded in a mortar and then made up into small pellets. The *chilolo* in charge of the trial held the test fowl and charged it as follows: "Let me tell the truth, I myself, let me tell the truth, O my bird of the court." He then administered a pellet to the bird and charged the poison in the following manner: "If you are a knowledgeable hunter swell [within it] but, if you are lying, my hunter, be expelled." If the fowl survived it was necessary to procure a fresh supply of the poison and repeat the test. If on the other hand the bird succumbed the potency of the poison was properly established and the trial proper could proceed. From this point there were some differences in procedure according to whether the trial was to be performed on humans, either the parties themselves or human proxies, or on animal proxies. When it was administered to animal proxies the *chilolo* next took the bird or other animal produced by the complainant, administered a pill and charged the poison to give a true verdict. The complainant then charged the poison, saying: "If I swear falsely may you swell [within it] but if it was he, the accused, who killed my fellow, be expelled, I have struck with you. Kill! Kill! Kill!" The accused's proxy was then given a pellet and similarly charged, the accused's rejoinder being: "If I have killed this man may you swell [within it] but, if he swears falsely about me, be expelled." The formal charge and counter-charge were an essential part of the trial.

When administered to the parties themselves or to human proxies, the trial was staged away from human habitation just after dawn, both parties standing in the sun facing the court in the presence of their assembled kinsmen. Among the Senga in the Luangwa valley the parties were required to sit on a log. The potency of the *mwavi* was first tested on a fowl in the manner described above, then a portion of the bark was mixed with a little meal and pounded in a mortar, one mortar for each party but bark from the same stem. The mixture was stirred into hot water and allowed to cool on pieces of broken shard (*chande*). After cooling it was administered first to the complainant, followed by a draught of water, and then to the accused in the same manner. The complainant charged the poison he had drunk in the way described above with necessary modifications, and the accused's charge followed. The poison did not act immediately and the kinsmen of the parties would start chanting to fill in the time, and, as the trial reached its climax and the poison began to take effect, the chanting grew to a wild crescendo and was

accompanied by the stamping of feet and the brandishing of weapons. So fierce were the passions aroused that often it is said the chief and his *vilolo* were constrained to intervene to prevent the dying man and his relatives from being attacked and stabbed to death. However, as a rule the kinsmen of the vanquished party realized the position and fled before this happened. The corpse of the deceased was either burnt or thrown into a pit and the victor was feted and awarded the *chilambo* present by the chief, in the same manner as was the slayer of a lion or leopard, this of course being in addition to the heavy damages which the successful party could exact from the family of the dead man, either for the killing or for the wrongful prosecution, as the case might be.

There appear to have been several variations of the form the poison ordeal took but the general principle that the bark was formally charged and indicated innocence by being expelled and guilt by being retained was the same everywhere. Cases have occurred since the occupation where persons charged with wrongdoing have voluntarily taken the poison themselves, sometimes in the raw state. One man from Savya village who did this was brought in and died under the Lundazi Boma flag-pole. Not everyone who retained the poison died, and furthermore antidotes were known and were sometimes permitted to be given on condition that the guilty party freely acknowledged his guilt and agreed that his family would make amends. It was recognized too that it was possible to fake the result by giving one of the parties a drug known as *mwelo* beforehand. According to the Portuguese author Baretto four to six grains of frankincense were also effective for this purpose. Anyone however found falsifying the ordeal was summarily put to death; thus it is said that at Chisembe near Chimbavi village in Chief Tembwe's area a man called Kalayile was put to death for this, and the Nanchere stream near Kazilondo is called after a woman of that name who was executed there for the same offence. In some instances persons defecated but this was still regarded as proof of guilt.

OTHER TESTS

The Angoni were not familiar with *mwavi* and instead used a test which involved jumping over a log of wood; if the person undergoing the test tripped he was adjudged to be guilty but if he cleared it he was innocent. They quickly accepted the superiority of the poison ordeal over their own test, and according to Cullen Young it "became a frequent and disastrous occurrence banishing entirely any attributes to justice." This was probably in part due to the fact that the Angoni only required the accused himself to undergo the ordeal and therefore complainants could make charges without any personal risk to themselves. This made witch-hunting on a considerable scale a possibility and this is borne out by Moir's description of

a witch-hunt at the kraal of the Angoni chief Chikusi which he witnessed.

The other local test is the boiling-water test, which is probably of greater antiquity than the poison ordeal and shows signs of dying harder. It was used for less serious forms of offence and particularly to prove allegations of adultery. The trial was carried out by first placing medicine on a white pebble and placing this in a pot of boiling water; the complainant and the accused were required in turn to plunge their arms into the water up to the elbow and abstract the pebble. Blistering signified guilt. It is remarkable that travellers who have seen the test performed testify that in some cases no blistering occurred. Before the trial each party charged the medicine to disclose who swore falsely, in similar terms to those used for the poison ordeal except that the word *kupokola*, meaning to blister, replaced the *wa*, expel, and the *pha*, swell, of the former test.

CONCLUSION

With the advent of British rule all forms of the ordeal were prohibited. They were regarded as a form of witchcraft and were punishable under the terms of the Witchcraft Ordinance. Despite this both forms were still practised clandestinely for some time afterwards and cases of the use of the boiling-water test have occurred in quite recent times.

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Studies in Clan Distribution 1745 and 1834

By R. L. MACKAY

A judicious man looks at statistics, not to get knowledge, but to save himself from having ignorance foisted upon him.

Thomas Carlyle, 1798-1891.

In 1906, the Rev. Angus Mackay¹ wrote of the "transportation" or eviction of the Moray men from the Province of that name around the year 1160. Those forcibly ejected included the tribes or formative clans of Mackay, Murray and Sutherland, who were thus compelled to seek living space for themselves where best they could. The great majority of them, over a long period, directed their course for the underpopulated County of Sutherland, where the progenitors of other clans were already busy establishing areas of settlement and influence. Several centuries of inter-clan warfare followed. After the defeat of the Jacobites in 1746 the clan system completely broke up, the wearing of the tartan was prescribed, the judicial functions of the chiefs terminated, and clan feuds ceased. Curiously, clan sentiment remained strong and even today there are hundreds of Highland clan societies throughout the Commonwealth, meeting frequently, and existing in the friendliest social relationship with each other.

By courtesy of the Countess of Sutherland and of Mr R. J. Adam, of the Department of History of St Andrews University, I was given the opportunity to examine and analyse a contemporary document, dated 1745, from the library at Dunrobin Castle. The first page opens as follows, the letter being addressed to the minister of the parish of Clyne.

Dunrobin.

14th August 1745.

Reverend Sir,

On Sunday last I had a letter from His Majesty's Advocate acquainting me that the Lords Justice had intelligence that The Pretender's Eldest Son had embarked on a ship of Forces with a good many men, arms, etc., ammunition with a design to land in Scotland, where he expected to be joined by the

¹ Angus Mackay, *The Book of Mackay*, Norman Macleod, Edinburgh, 1906, p. 23.

Highlanders, but as the landing place is not condescended upon, 'Tis best to be prepared against the worst.' Therefore I desire you, without loss of time you send me a list of such men as you think can carry arms from 16 years of age to 60, and what arms they can furnish. In the list you will mark out such as you know anything of Military Discipline that I may take my measures accordingly. In this I expect your utmost care and diligence.

I am, Sir,

Sutherland.

The minister of Clyne, and the ministers of the other eight parishes then forming the Sutherland Estate, or in which the Earl had land, certainly acted with speed and efficiency, for within a week or two the nine parish ministers had been able to send to the Earl a total of 2071 names and addresses of men judged fit for service by the ministers, assisted by their elders. From these lists I have chosen some 16 clan or family names of importance to my purpose, showing their distribution among the parishes. All other clans with few representatives are grouped together in one line at the foot of Table 1. There is some evidence² that the Earl wrote on the same subject to Lord Reay. Presumably he received a reply. A recent search among the Reay papers in the Library in Edinburgh failed to show corresponding lists for the other five parishes of the county. The Mackay chiefs were not renowned for efficiency in their office work.

Dr Ian Abrach Mackay of Glasgow recently gave me a copy of *The List of Subscribers to the Memorial to the First Duke of Sutherland*, dated 1834. This list was printed privately by James Loch, M.P., Commissioner to the Duke. Subscriptions were received from all 14 parishes in the county. The largest ones were from £10 up to £30 or £40 from friends and major tenants or tacksmen, around £3 from ministers, and the great majority from small crofters, ranging from 6d to 2s 6d. I submitted this list to the same analysis as the former. It is summarised in Table 2, and had 2227 names and addresses.

It is here admitted that these lists are not comparable except for onomastic analysis, and for the distribution of clan names in the relevant years, 1745 and 1834. If accepted too literally they will lead one astray. I therefore confine myself to comments, and avoid rigid conclusions.

² Mark Rugg Gunn, *History of the Clan Gunn*, Alexander MacLaren, Glasgow, 1970, p. 189.

TABLE 1

*Men aged 16-60 fit to bear arms in nine parishes of Sutherland Estate in August 1745**

<i>Clan</i>	<i>Clyne (Brora)</i>	<i>Creich (Bonar)</i>	<i>Dornoch</i>	<i>Farr</i>	<i>Golspie</i>	<i>Kildonan</i>	<i>Lairg</i>	<i>Loth</i>	<i>Rogart</i>	<i>Total</i>
Gunn	5	2	6	6	9	30	—	5	—	63
Macdonald	3	8	3	3	1	1	38	2	13	72
Mackay	18	38	36	27	21	13	50	8	72	283
Mackenzie	5	5	5	4	2	—	7	—	10	38
Macleod	4	16	4	14	1	3	13	4	5	64
Munro	1	32	27	8	5	3	4	—	4	84
Murray	1	21	19	1	13	3	4	13	19	94
Matheson	5	6	5	4	4	2	10	4	9	49
Ross	3	76	28	1	15	—	5	10	4	142
Sutherland	67	8	26	—	20	27	8	11	31	198
Morrison	—	—	—	6	1	—	2	—	—	9
Gordon	4	—	8	12	8	16	5	2	3	58
Forbes	—	6	2	—	—	—	—	—	—	8
Bain	—	2	14	12	9	—	—	2	1	40
Roy and Robertson (3)	1	1	5	10	9	—	1	6	1	34
Bannerman	1	—	—	—	3	10	—	3	—	17
Others	37	92	186	178	98	34	36	102	55	818
Totals	155	313	374	286	219	142	183	172	227	2071

* In these nine parishes in eastern Sutherland the following names were absent in 1745: Morgan, Sinclair, Keith, Oliphant. The patronymic MacSeumais (Mackames, MacHamish) was common in the Clan Gunn. There were 111 in the lists included in the Clan Gunn total — four in Dornoch, four in Farr, two in Golspie, and one in Loth.

TABLE 2
*Clans and parishes of subscribers in Sutherland to the memorial to the 1st Duke in 1834**

<i>Clan</i>	<i>Assynt</i>	<i>Clyne</i>	<i>Creich</i>	<i>Dornoch</i>	<i>Durness</i>	<i>Eddra-chillis</i>	<i>Farr</i>	<i>Golspie</i>	<i>Kildonan</i>	<i>Laing</i>	<i>Loth</i>	<i>Reay</i>	<i>Rogart</i>	<i>Tongue</i>	<i>Total</i>
Gunn	—	5	—	6	1	1	6	12	—	3	8	4	3	12	61
Macdonald	10	7	—	4	—	—	27	5	—	9	9	20	15	1	107
Mackay	4	30	3	45	11	6	119	10	3	24	15	48	65	124	507
Mackenzie	58	2	—	8	1	2	5	3	—	4	5	3	12	5	108
Macleod	110	6	—	3	—	2	16	6	1	1	10	11	3	12	181
Munro	13	2	2	18	1	—	18	7	—	—	1	4	13	21	100
Murray	—	15	3	18	—	—	1	9	—	5	9	1	17	2	80
Matheson	10	2	—	30	—	1	2	2	2	7	10	1	10	8	85
Ross	6	9	2	35	2	4	4	10	2	11	10	2	9	9	115
Sutherland	—	54	1	30	—	—	1	14	5	4	22	7	33	14	185
Morrison	3	—	—	1	1	—	3	—	—	—	—	—	—	6	14
Gordon	3	6	—	—	—	—	7	2	4	—	7	1	7	2	39
Forbes	—	1	—	2	—	—	—	—	—	1	—	—	—	1	5
Bain	—	—	—	—	—	—	6	—	—	—	—	—	—	2	8
Robertson	—	—	—	—	—	—	3	1	2	—	—	—	—	—	6
Bannerman	—	2	—	—	—	—	—	3	—	—	17	—	—	—	22
Campbell	4	1	—	6	4	—	8	—	2	3	—	8	6	15	57
Fraser	3	3	—	4	—	—	1	3	—	1	7	4	—	1	27
Keith	—	—	—	1	—	—	—	1	—	—	—	—	—	—	2
Sinclair	—	—	—	—	—	—	—	—	—	—	—	6	—	—	6
Others	48	60	14	52	10	6	27	82	15	9	75	27	30	57	512
Totals	272	205	25	263	31	22	254	170	36	82	205	147	223	292	2227

* The population of the county in 1831 was: 25,518. The Sutherland family held no land in the parishes of Eddrachillis, Durness, Tongue and Reay. In Creich, only Invershin and Achinduich belonged to the family. The whole of Assynt was in the estate, bought by Lady Strathnaver in 1757 for £12,000.

To facilitate critical examination Table 3 is now presented. It has been extracted direct from the data in Tables 1 and 2. It applies only to the nine parishes, all conjoined,³ in which the House of Sutherland owned land. It excludes the four parishes of Mackay's Country, and Assynt. It shows the numbers of clansfolk in the two groups, military and subscribing, in the years 1745 and 1834. These numbers are then shown as a percentage of the total in the list in which they occur for the two years mentioned. The table has been built up to ascertain if any clan movements, predilections or tendencies are discernable within the years mentioned. It is agreed that any deductions could only be approximate, and subject to confirmation or revision by county and parish historians.

TABLE 3

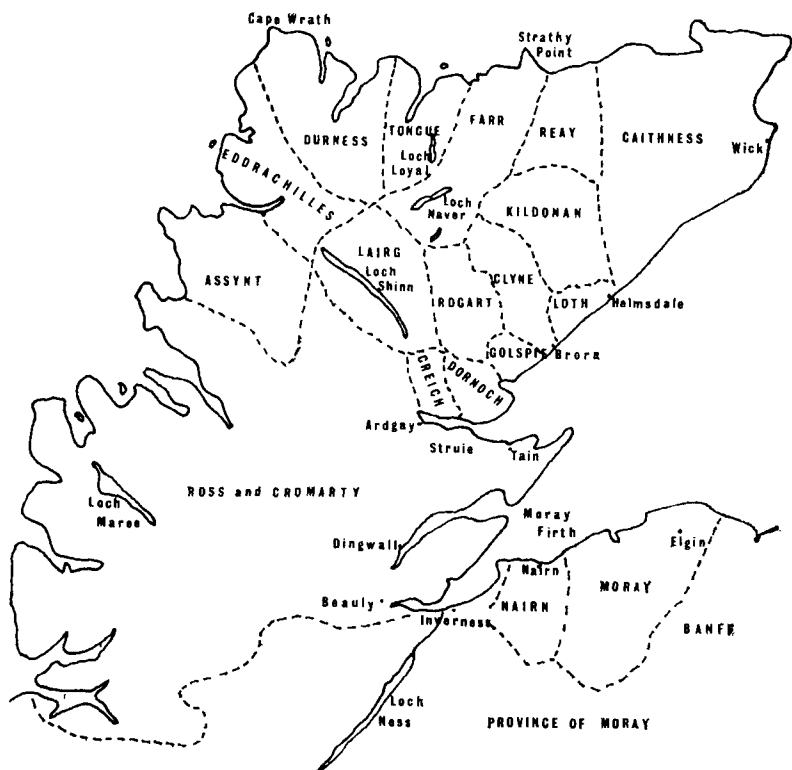
Clansfolk in the nine parishes of the Sutherland Estate

Clan	Year 1745		Year 1834	
	Military List—2071 names		Subscribers—2200 names	
	Numbers	%	Numbers	%
Gunn	63	3.0	43	1.9
Macdonald	72	3.5	76	3.4
Mackay	283	13.5	314	15.0
Mackenzie	38	1.8	39	1.75
Macleod	64	3.1	46	2.06
Munro	84	4.0	61	2.7
Murray	94	4.5	77	3.45
Matheson	49	2.4	65	2.19
Ross	142	7.0	92	4.1
Sutherland	198	9.6	164	7.4

It may surprise the reader to note that the percentage of Mackay names should alone increase in the Sutherland Estate in the period which includes the major Clearances. Were they more lusty or faster breeders than their neighbours?

The 1845 Subscribers' List for all 14 parishes showed the following percentage representation for the principal clans.

³ The nine parishes were Clyne, Creich, Dornoch, Farr, Golspie, Kildonan, Lairg, Loth and Rogart. Mackay parishes were Farr, Tongue, Durness and Eddrachillis, but much of Farr had been sold by the 1st Lord Reay to the Earl of Sutherland in 1642. The parish of Reay lies half in Sutherland and half in Caithness.



Parish Map of Sutherland

Adapted by courtesy of John Prebble and of Secker and Warburg.

TABLE 4

Mackay	23.0%
Sutherland	8.4%
Macleod	8.2%
Ross	5.2%
Macdonald	4.9%
Mackenzie	4.9%
Gunn	2.7%

I believe that both the Military Census and the Subscribers' List were honestly compiled by the ministers and collectors respectively, and are close to the truth. The extraction from them of 4271 names and addresses has been carried out with all the accuracy at my command, so that the four tables derived therefrom should be a good reflection of the facts.

Before examining the tables in detail it is proper to take note of the opinions of modern historians about the state of the Highlands in the six centuries before, say, the Jacobite Rebellion of 1745. In general, they agree that in this period there was little, if any, change in the economy, in trade, housing, agriculture, social and domestic life, especially in the far north. True, Anglo-Normans, Lowlanders and English were coming into the land each year, while there was an emigration of natives, especially an outflow of soldiers, thousands of whom never returned. These opinions are quoted in an Appendix to this essay. If they are justified then I may assume that clan areas of residence and influence (barring minor changes) did not alter greatly after the Murrays, Sutherlands and Mackays had settled in. Even when a great chief sold his land, as did Donald, 1st Lord Reay, in 1642, to pay his debts, his people remained on the land under the new owner, often an absentee proprietor living in England or Edinburgh. So I assume that the parish/clan distribution of 1745 and 1834, combined, represents, in the rough, a pattern present for some five or six centuries earlier in Sutherland. It would be interesting to see if this opinion is confirmed or disproved by the appearance of much earlier lists from Dunrobin than those employed here. One can now examine all four tables to ascertain what light they may throw upon the history of some of the clans resident in the county.

Although there is little in common between the conscripted men of 1745 (except clan names) and the conscripted subscribers (some widows among them) of 1834, nearly a century later, one proceeds nonetheless to examine the data available about these clanfolk, clan by clan, in the order shown in the tables.

Gunns — One of the smaller clans in Sutherland, but of greater interest and importance than its numbers would suggest.

Thirty men of Mars in Kildonan in 1745 leave no equivalent reminder there in 1834—a direct result of the evictions.

The absence, or very small numbers, of Gunns in parishes of the county distant from Kildonan, namely Assynt, Creich, Durness, Eddrachillis, and Lairg illustrates what I call “the togetherness” of this clan. This quality is further emphasised by the continuing activities of the Clan Gunn Society, and by the publication in 1970 of a splendid book, *History of the Clan Gunn* by Dr Mark Rugg Gunn.

While Kildonan is historically the valley or home of the Gunns, Table 1 shows that they were by no means the sole inhabitants. They represented 21 per cent of the parish population (30/142). The small total of 36 non-Gunn subscribers in 1834 (and no Gunns) underlines years of depopulation, misery and struggle.

Macdonalds — An ancient clan of Hebridean-Viking origin. In 1745 it had representatives in all parishes of the Sutherland Estate, and doubtless many in Assynt. By 1834 there would appear to have been a movement northward of its clansfolk to the parishes of Farr and Reay, for reasons not known to me.

Mackays—The most numerous clan in the county, and present in all parishes in each list. In 1745, its 283 men of arms out of 2071 meant that 13.7 per cent of the folk on the Sutherland Estate were Mackays, while, in 1834 its figure for the whole county was 23 per cent. This latter figure must be an underestimate. Table 2 shows only three Mackay subscribers in 1834 in Creich parish, but the Census of 1841 revealed 58 Mackay crofters, or heads of families or craftsmen. The estate had only two small hamlets in the parish, namely at Invershin and Auchinduich. So the inhabitants of the other hamlets were under no obligation to subscribe. Mackay-Scobie⁴ reported that when the Reay Fencibles were raised in 1794 there were 220 Mackays (27.5 per cent) out of a total of 801 of all ranks, while in 1798 the Sutherland Fencibles⁵ had 211 Mackays (19.49 per cent) in a regimental strength of 1084. One must conclude from these figures that through the period 1745-1834 about one-fifth of the population were Mackays, and, if the historians quoted in the Appendix are correct, then this proportion may have been existing for several centuries earlier.

Except for the clans Matheson and Morrison, the Mackays

⁴ I. H. Mackay-Scobie, *An Old Highland Fencible Corps*, Edinburgh, 1914, p. 41.

⁵ I. H. Mackay-Scobie, *op. cit.*, p. 26.

were the last clan to invade Sutherland and settle there. How then did they come to be the most numerous? I suggest that while in the Province of Moray they (or their progenitors) were already great in numbers compared to the other Moray clans (or tribes). Because of the Rebellion of 1160 and the consequent exodus their numbers increased still more by accretions from other clans, who transferred their loyalty to the Mackays (i.e. Morgans). The Mackays indeed became an amalgam. They reached Sutherland in great numbers, straggling, disorganised, certainly not a fighting force. Their exact history around the year 1200 is obscure. It may well have taken the clan a whole generation to consolidate its new territory in Sutherland, in the north-west, to re-group and unify its scattered old and new adherents. Only when this was completed could it direct its pent-up energies in acts of rebellion and warfare in alliance with or against its neighbours. Clan warfare had more or less ceased in the seventeenth century, but as late as 1834 nearly half of all the Mackays in the county were still living in their historic citadel, the parishes of Tongue and Farr.

Mackenzies—The Mackenzies did not make a great impact upon the county. When the Reay Fencibles were embodied there were 40 Mackenzies in the regimental total of 801, i.e. 5 per cent. Both tables show them avoiding the east coast, but in Assynt alone, they, with the Macleods, were a dominant factor.

Macleods—Both tables show a thin spread of Macleods, but in Assynt they far outstrip all other clans. So strong are they that the figures suggest that their progenitors had a well-established hold on that mountainous parish before the Mackays entered Sutherland around 1160. There were only four Mackay subscribers out of a total of 272 in Table 2. Gunns, Murrays and Sutherlands made no progress there, even although Lady Strathnaver (of the Sutherland family) had bought it in 1757 for her grandson.

Murrays—In 1745, the Murrays displayed a strong preference for the coastal parishes of Creich, Dornoch, Rogart, Golspie, Loth, a feature continued later in Dornoch, Rogart and Clyne. Eviction and emigration probably account for the decrease in Murray folk in 1834. The coastal distribution suggests to me (along with their absence in Assynt, Durness, Eddrachillis, and unitary presence in Farr and Reay) that they came to Sutherland from Moray by sea. The figure of three subscribers in Creich is subject to the same criticism as for the Mackays there, as the 1841 Census showed there were 39 heads of families of the name Murray in the parish in that year.

Matheson—This clan escaped from the tutelage of the MacDonalds, and established a branch in central Sutherland in the

fifteenth century. Numerically they were not important; there is little trace of them around Loch Shin now. In 1834 there were 34 Matheson subscribers in Dornoch, the commercial centre of the county. In 1845, Duncan Matheson⁶ reported 42 heads of families there. He complained that the members of the clan were poor at answering letters. They had a tendency to spread themselves widely, even although a small clan, into areas of commercial profitability, a characteristic still present.

Ross — A powerful clan with an ancient history. In 1745 they were strong in Creich and Dornoch, i.e. nearest their Ross-shire base. I cannot account for their apparent dislike of Creich in 1834.

Sutherlands—The second most numerous clan in the county, in both tables. But they had no representative in Farr in 1745 thought fit to carry arms. In 1834, they shunned the Mackay country like the plague, namely the parishes of Durness, Eddrachillis and Farr. From Assynt not a penny came from a Sutherland to the Memorial Fund. Both tables showed a dominance of Sutherlands in the parishes of Clyne, Rogart, Dornoch, Golspie and Loth, suggesting a sea invasion, as with the Murrays. The marked diminution in Kildonian was due to the evictions from that parish around 1813. The Mackays must have found something very attractive about the Sutherlands, for in the parishes where the Sutherlands were most numerous, namely, Clyne, Rogart and Dornoch, there were no less than 140 Mackay subscribers.

Bannerman—There were 10 men fit for service in Kildonan in 1745. Table 2 illustrates the drastic population change. Bannermans had to emigrate to Canada with the Gunns, or accept patches of shore land in Loth. I have never discovered whose banner they carried—the King's? The Forbes'? Their own?

The clans on the list not commented upon had too small numbers for my purposes.

The figures in Table 5 are taken from Alexander Mackenzie's *The History of the Highland Clearances*⁷ and show the "Population in certain decades of all the Parishes of Sutherland, in whole or in part." This refers to the fact that Reay is given in both Sutherland and Caithness records. The parish lies half in each county.

⁶ Alexander Mackenzie, *History of the Mathesons*, Stirling, 1900, p. 135.

⁷ Alexander Mackenzie, *The History of the Highland Clearances* (Second edition), Alexander Maclaren, Glasgow, 1946. The figures are printed without permission. My letter to Maclarens was returned "Address unknown." I acknowledge my debt to both.

TABLE 5

<i>Parish</i>	1801	1831	1841	1851	1881
Assynt	2419	3161	3176	2989	2781
Clyne	1643	2711	1765	1933	1812
Creich	1974	2562	2852	2714	2223
Dornoch	2362	3380	2714	2981	2525
Durness	1208	1153	1109	1152	987
Eddrachillis	1253	1965	1699	1576	1525
Farr	2408	2073	2217	2403	1930
Golspie	1616	1149	1214	1529	1156
Kildonan	1440	257	256	2288*	1942*
Lairg	1209	1045	913	1162	1335
Loth	1374	2234	2526	640*	584*
Reay	2405	2881	2811	2506	2191
Rogart	2022	1805	1501	1535	1227
Tongue	1348	2030	2041	2018	1929

* The lands of Helmsdale and others previously in the Parish of Loth, were, about this time, added to Kildonan, which accounts for this large increase. What was the motive? Who was the motivator? The population of Sutherland in 1871 was 23,686 and in 1971 13,055. The population of Caithness in 1871 was 27,345 and in 1971 27,779.

APPENDIX

The ardent Highlander may not agree with the comments of modern historians about the state of the Highlands in the period of some six centuries before the 1745 Rebellion, but it is prudent to know what has been written on this subject.

Hume Brown⁸ wrote: "At the beginning of the 18th Century the Highlanders remained in much the same condition as they had been in for hundreds of years before, still divided into clans with chiefs over them."

Fitzroy Maclean:⁹ "In the North West, beyond the Highland Line, life went on much as it had done for 500 years or more" (i.e. prior to the reign of James IV, 1485-1513).

Macdonald:¹⁰ "In 1770-1850, economic organisation, at least in the more remote areas, had changed but little from mediaeval times. Feudalism still held sway in certain parts."

John Prebble:¹¹ "17th Century. They lived in crude huts, the

⁸ Peter Hume Brown, *A Short History of Scotland*, Oliver and Boyd, Edinburgh, 1908, pp. 508-509.

⁹ Fitzroy Maclean, *A Concise History of Scotland*, London, 1970, p. 66.

¹⁰ D. F. Macdonald, *Scotland's Shifting Population, 1770-1850*, Jackson and Company, 1937, p. 2.

¹¹ John Prebble, *The Lion in the North*, Penguin Books, 1973, p. 226.

floor covered with fern and heather on which they rested with healthy ease, contemptuous of all civilised comforts.”

Angus Mackay:¹² “During the time of Donald, 1st Lord Reay (1614-1649), there is some evidence that the people of Strathnaver were growing in culture, rude as it was from our standpoint. More and more of the leading families were learning to write as their signatures to wadsets, etc. prove. Many may have learned to write while serving abroad as military officers.”

William Croft Dickinson:¹³ “Even in the middle of the 17th Century, an English traveller in Scotland was amazed to see sheep grazing on the roofs of those low houses; and a little later, another traveller spoke of the houses of the common people as ‘very mean, mud wall, and thatch’; these primitive dwellings had usually only one room, or two rooms at the most, with a floor of beaten earth.”

Iain Moncreiffe,¹⁴ on the other hand, gives a less depressing and more charitable picture of the Highlands in general, embracing all aspects of life therein, without disturbing the general impression quoted earlier that change, if any, was painfully slow.

Mackay-Scobie:¹⁵ “The population was kept down by constant visitation of smallpox and other diseases directly attributable to defective accommodation and insanitary surroundings, while the generally hard conditions of life prevented any but the strongest children reaching maturity. On the other hand, owing to the climate being bracing and salubrious, longevity was common. The physique was of a high order, and their height above average.”

From these foregoing comments I gain the impression that, in the centuries before Culloden, clan areas of influence and clan habits did not change to any extent. True, each chief raided his neighbour from time to time, stealing cattle, sheep and goods, and occasionally women, and at the end of the raid returned to his own domain to await reprisals in due course, as their stricken enemies recovered strength, or made formidable alliances with other clans. Even when a chief sold land in order to raise money for war, either in Britain or abroad on the Continent, or for pleasure, as did some of the Mackays, there was little change of population.

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¹² Angus Mackay, *op. cit.*, p. 141.

¹³ William Croft Dickinson, *Scotland from the Earliest Times to 1603*, London, 1961, p. 372.

¹⁴ Sir Iain Moncreiffe of that Ilk and David Hicks, *The Highland Clans*, London, 1967.

¹⁵ I. H. Mackay-Scobie, *op. cit.*, p. 20.

There are many clan societies. The addresses of the Honorary Secretaries of some of those mentioned in this essay are as follows: —

Clan Gunn Society—Miss A. Gunn, 145 Craigleithall Avenue, Edinburgh, 4.

Clan Donald Society—Robert A. MacDonald, 122 Wellington Street, Glasgow, C.2.

Clan Mackay Society—Norman C. Mackay, 62 King's Park Avenue, Glasgow, G44 4UP.

Clan Mackenzie Society—J. S. Thompson, 88 Morningside, Edinburgh, 10.

Clan Macleod Society—J. Macleod Nichol, 35 Balgreen Road, Edinburgh, 12.

Clan Munro Society—F. Munro, 5 Station Road, Dingwall.

Clan Murray Society—A. Russell Murray, 46 Lander Road, Edinburgh.

Clan Matheson Society—Richard J. Matheson, 81 Lisbon Avenue, Twickenham, Middlesex.

Clan Ross Society—J. Hector Ross, 20 Alva Street, Edinburgh, 2.

Glasgow Sutherlandshire Association — Donald Morrison, 8 Hertford Avenue, Glasgow, W2.

The Clan Mackay Society of North America—Miss Caroline Mackay, 249 Summers Avenue, N.E. Orangeburg, South Carolina 29115.

United Scottish Clans Association—Kenneth Hay, B.E.M., 4 Rankin Avenue, Edinburgh.

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Inconsistency Among Measures of Hostility

By HENRY H. REITER

ABSTRACT

Four measures of hostility were intercorrelated: Page Fantasy Scale Hostility Score; Iowa Picture Interpretation Test (I.P.I.T.) Hostility Score; Edwards Personal Preference Schedule (E.P.P.S.) Aggression Score; and the Cattell Assertive (E) Score. Most of the obtained interrelationships were low.

The importance of understanding human hostility and aggression has been emphasized by such authors as Scott (1958) and Toch (1969). Further, the most frequently used measures of hostility and aggression have not seemed to be measuring the same thing. Lindzey and Tejessy (1965) reported that the TAT n-Agg score was not related to the same thing as was the Rosenweig Picture-Frustration Test. In a summary of the literature Lesser (1965) revealed wide inconsistencies in the measurement of the variable of aggression.

The present investigation purported to contrast four distinct measures of Hostility (Edwards Aggression; Cattell Assertive; Page Hostility and Iowa Hostility) in order to study the relative degree of their interrelationships.

METHOD

Seventy-six (76) randomly selected college males and females served as Ss. Each completed the Edwards Personal Preference Schedule (E.P.P.S.); Cattell 16 P.F. Questionnaire; Iowa Picture Interpretation Test (I.P.I.T.), a multiple-choice variation of the T.A.T. (Hurley, 1955); and Page Fantasy Scale (Page, 1960). The four tests were given in random order.

RESULTS AND DISCUSSION

Table 1 presents Pearson product-moment correlation coefficients which were obtained among the four variables in question.

TABLE 1

Intercorrelation among four measures of hostility (N=76)

Cattell E	0.32*	-0.09	0.28†
E.P.P.S. aggr.	---	0.20	0.34‡
I.P.I.T. Host.	---	---	0.20

* $p < .01$ † $p < .05$ ‡ $p < .01$

The results presented in Table 1 indicate that hostility as measured by the I.P.I.T. had little or no relationship to hostility as measured by the other scales. The intercorrelations among the Cattell, E.P.P.S. and Page hostility scales were all significant yet not highly substantial. The results suggest that each of these scales are relatively independent of one another and may well measure different aspects of a complex construct known as hostility.

SUMMARY AND CONCLUSIONS

Four measures of hostility were intercorrelated: Page Fantasy Scale Hostility Score; Iowa Picture Interpretation Test (I.P.I.T.) Hostility Score; Edwards Personal Preference Schedule (E.P.P.S.) Aggression Score; and the Cattell Assertive (E) Score. Most of the obtained interrelationships were low.

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Cavalli-Sforza's Population Genetics

In October 1974 Dr F. J. Irsigler, a regular contributor to this journal, wrote a letter to the *Scientific American* criticising L. L. Cavalli-Sforza's population genetics. So far the letter has not been published by *Scientific American*. A German translation was published in *Neue Anthropologie*, Jahrgang 3, Heft 2, April-June 1975. We are publishing Dr Irsigler's letter in full.

The September issue, 1974, of *Scientific American* carries on p. 81ff an article "The Genetics of Human Populations" by L. L. Cavalli-Sforza. Am I allowed to make a few comments? In introducing his article the author states: "Since the species *Homo sapiens* emerged less than 100,000 years ago, it has by definition shared a common pool of genes."

"Pool of genes" may be taken as meaning either the sum-total of genes present, or a subset (varying in size) of the set of genes. In the first case, the author's statement is obviously false: there are groups of people who lack certain genes present in others. Otherwise one could not explain why, say, a Danish couple never begot a Negro infant. In the second case, Cavalli's definition of species is equally inadequate. We share a number of genes (e.g. those determining certain blood groups) with the higher primates. Do we, therefore, belong to the same species? According to E. Mayr a gene pool is "the totality of the genes of a given population existing at a given time." In this definition, the emphasis is on the term "population existing at a given time." It is the "natural" population, not the species as a taxonomic term that is the unit of evolution. Species formation requires inbreeding practised by genetically isolated minorities; it is not an extended accumulation of random genetic events. Therefore, mutation rates cannot be translated into rates of evolution. Production of fertile offspring is not an alternative but a graded continuum. Consequently, it is unsuitable as a criterion for classificatory division. Species under natural conditions do not interbreed, subspecies do. Since the works of A. Keith, Sewall Wright and L. S. B. Leakey, the concept of endogamous breeding circles, determined by preference and resulting in assortative mating, has become fundamental in population dynamics. I also refer to the recent work *Structures Génétiques des Populations* by Albert Jacquard (Paris, 1970), now available in English.

Cavalli refers to the emergence of modern man in the strict sense of his "species *Homo sapiens*" as the time of what he calls the original split or the oldest separation in the tree (p. 89).

This view and his conclusion "that the differentiation among races began not long after the appearance of modern man" is open to serious objections. There are anthropologists and paleontologists of repute who apply the term "*sapiens*" to fossils much older than 40,000 years. According to Carleton S. Coon, European man has reached the threshold of *Homo sapiens* by 250,000 years B.P. The Vertesszöllös fossil, discovered in Hungary in 1965, is dated to the Mindel glaciation, some 500,000 years ago. The Hungarian anthropologist A. Thoma classifies the Vertesszöllös skull, on the ground of its estimated capacity of 1400 cc, as a subspecies of *Homo sapiens*. William W. Howells ("Homo Erectus," *Scientific American*, Reprint No. 630, 1966) points out that "Thoma's finding therefore places a population of more progressive, *sapiens* humanity contemporary with the populations of *Homo erectus* 500,000 years ago or more." This shows not only differing rates in evolution and, consequently, considerable overlapping, but demonstrates also the inadequacy of the taxonomic species as the unit of evolution. Likewise, Elaine Morgan (*The Descent of Man*, New York 1972), concluding from new insights into the desiccation of Africa during the Pliocene, suggests that race differentiation took place prior to the emergence of *Homo sapiens* s. str. This is in line with views expressed previously by Franz Weidenreich and C. S. Coon. According to Coon, *Homo erectus* "evolved into *Homo sapiens* (our self-named Wise Man), not once but five times, as each subspecies or race living in its own territory passed a critical threshold from a more brutal to a more sapient state."

What Cavalli actually has in mind is expressed in the statement following the one under discussion. It reads: "The differences within a human population are greater than those between populations."

The obvious implication here is that the differences between human populations are negligible. This is equivalent to what is called the racial equalitarian view, a moral imperative resting (according to Dobzhansky) on the equality "before God." Cavalli's implication is fallacious. The fallacy resides in the fact that two things are compared which are incomparable. The two incomparables are the range of differences (the extent of variation) within a single population and the mean of the range of differences between two different populations. Klineberg and Montagu, by the way, use the same fallacious argument, as do many of the so-called environmentalists. To illustrate (this is due to H. Kiesel): the range of differences in bodily size in men of a given population may be 30 cm. or more, and the mean difference between men and women only 5 or 6 cm. This does not invalidate the statement that, on the average, men are taller than women,

nor does it follow from this that, with regard to tallness, men and women are "equal."

Though uncovered by J. D. J. Hofmeyr and Henry E. Garrett, among others, years ago, the fallacy inherent in comparing overlapping groups turns up with tiring monotony in the semi-popular literature concerned with the "family of man."

Incidentally, in his article (together with Walter F. Bodmer) entitled "Intelligence and Race" (*Scientific American*, October 1970, pp. 19ff), Cavalli uses the same argument by stating (on pp. 20-21): "... the extent of variation within any population generally far exceeds the average differences between populations." Here, again, the reader is induced to draw a false conclusion from a true statement.

IMPORTANT REPRINT

**Practical Considerations which are
Fundamental in Bantu Affairs in
Rhodesia and for an Understanding
of Negroid-Caucasoid Problems
Generally**

by R. GAYRE OF GAYRE

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A Note on the Black Death

By NATHANIEL WEYL

Subsequent to publication of my article on the class and regional impact of the Black Death,¹ new data have come to my attention which cast interesting additional light on the subject.

Writing in the Authoritative French journal, *Annales: Economies, Sociétés, Civilisations*, Michèle Bordeaux asserts that, while smallpox morbidity is greater among those with A-type blood, bubonic plague more frequently attacks those with O-type. It is also presumably more lethal among O-type populations. The conjectured reason for this difference is "the existence of heterologous antigens on plague bacilli or smallpox viruses. . . ."²

The inference is that bubonic plague epidemics, and the Black Death in particular, tended to wipe out such paleolithic peoples as the dolichocephalic primitive Basque element to a greater extent than it did their neighbors. The survival rate of Alpines would presumably have been lower than that of either Nordics or Mediterraneans. This last conclusion, however, must be qualified by the consideration that mountain barriers often protected Alpine peoples from plague infection.*

It is also of some interest that the plague-carrying flea is attracted to the color *white* (and therefore might be drawn to the sheets and bedding of the well-to-do). The insect has an inexplicable aversion to the smell of horses, goats, sheep, cows and camels.³ This might have provided some protection to those peasants and villagers who slept with their livestock. The plague-flea also has a distaste for the odor of cooking oils made from olives, peanuts, etc., a circumstance possibly favorable to Mediterranean populations. It is interesting that the people of the Middle Ages had an empirical awareness of these facts, but were as ignorant of their cause as we are.

¹ Nathaniel Weyl, "The Black Death and the Intellect of Europe," *THE MANKIND QUARTERLY*, Vol. XV, No. 4, April-June 1975, pp. 243-254.

² Michèle Bordeaux, "Blazing a Trail to a History of Customary Law by Means of Geographic Hematology," in Robert Forster and Orest Ranum (Editors), *Biology of Man in History: Selections from Annales: Economies, Sociétés, Civilisations*, John Hopkins Press, Baltimore, 1975, 198-199.

* The Atlantic racial strain is strong on the western and northern seaboard of Europe, and this is largely O-blood group. Consequently the selection would be against this population also.—EDITOR.

³ J.-N. Biraben and Jacques Le Goff, "The Plague in the Early Middle Ages," in Robert Forster and Orest Ranum, *op. cit.*, 53.

Book Reviews

PYGMY KITABU

By Jean-Pierre Hallet with Alex Pelle. Souvenir Press, London, 1974. Pp. 435, numerous diagrams, 45 illustrations. Price £4.00.

In this book Jean-Pierre Hallet, who has lived with the Ituri pygmies for ten years, holds that they are not black, but have skins comparable with the dark Caucasoids, and, occasionally, blue and grey eyes, and foreheads of European cast.

He rightly refers to Hooton's original idea that the Bushmen were related to the Mongoloids (and so, in part the Hottentots, with some Hamitic also) and that the Watusi and Masai are partly Caucasoid—that is Hamitic—through a filter of Somali and Ethiopians.

In other words, as I see it, and as I have theorised in the past, this fits in with my ideas that all these stocks evolved outside Africa at a remote period and drifted into Africa before the coming of the Negroes. He cites the view that the Negro is a later comer to Africa, having come from Melanesia—which was Leakey's idea, as he told me that Haddon had held this view, and when he had time, he intended to do research on it. Haddon having actually held that patterns and designs used by the Negroes of Africa were identical with others used by the Negroes of Melanesia. Alas! Leakey did not live long enough to carry out this research.

As to the Australopithecines, I do not believe they were ancestral to man, or rather men, as there are many men of origins distinct from each other, but merely a line of ascent which died out.

The Caucasoid-like bones of Olduvai Gorge, as the writer correctly states (p. 8) make a mockery of the Australopithecine ancestry of the modern Bushmen and Negroes. "The white man's lips are thin and apishly unverted. He has simian-style eyebrow ridges. Far from being a 'naked' ape, he has so much beard and body hair that the smooth-skinned African Negroes very widely call Caucasians by a disparaging nickname meaning 'the hairy ones' or 'the hairy people.' These traits, in combination with the genes for light skin, hair and eyes, are shared by Caucasoids with the African Pygmies and with *nobody else*."

Also Schebesta has mentioned the Ituri Forest Pygmies have the tradition that their ancestors were white. Trilles reports that the Gabon Pygmies were once white. The Efé Pygmies describe the Deity as tall with a long wavy beard.

The author takes issue (p. 9) with Robert Ardrey's influential book *African Genesis* which portrays Pygmy-sized Australopithecines of savage propensities. There is no evidence that the Australopithecines were anything of the sort. Far from being aggressive, the Pygmies are not; and as compared with the Negroes, who have often enslaved them, are docile. They are a people who are monogamistic, are highly moral and practice a monotheistic religion. Their legends have striking parallels with Old Testament equivalency (p. 13) but these have not been borrowed from Jewish, Christian or Mohammedan sources.

Bes, the Egyptian god, is represented as a Pygmy. They are mentioned by the Egyptians. Nut, the goddess of the Egyptians, mother of Osiris, has been compared with Athena, the virgin mother of Heaven, the Virgin Mary. The Pygmies have a similar person called Matu, Mother of God. (Actually Nut and Matu may be from the same root.)

The Ituri Pygmies are the most primitive living members of our species, but are far from animistic. They pooh-pooh the local Negro's fears of evil spirits. They will have nothing to do with their fetishes (p. 15).

The author supports Father Wilhelmin Schmidt. "The Negro tribes of modern Black Africa are known in tourist-type literature as 'the natives.' But they are not 'the natives'—they have the same relationship to the aboriginal Pygmies as the Yankee residents of the United States have to the Digger Indians" (p. 21). Strong words but undoubtedly true.

The Pygmies have a Creation story similar to that of Genesis, which the author says would not have been derived from any outside source. (p. 27.) There is paradise, a man moulded from the earth, a tree, and a woman who led him into sin. There is a fruit which the woman urges him to eat. The author contends (p. 28) that the story belongs to the pre-Negroid Africa of Pygmy and Caucasoids (Egyptians, Hebrews and Arabs).

For myself, I look to somewhere in Asia for the starting point of the Caucasoids, comprehending, however, in due course northern Africa.

From the photographs which he gives, many of the Pygmies have pepper-corn hair, which attests to some crossing with Bushmen, while others have woolly hair, witnessing to Negroid infiltrations. But, besides, some have quite regular hair, presumably from their Caucasoid, or proto-Caucasoid ancestry.

The author relates how a Pygmy elder said that he had watched Father Trilles and Monseigneur Le Rey for three days in his magic mirror. He recounted their journeys and also their conversations (although in French). This indicates a psychic capacity beyond the normal (p. 64).

The writer argues that the Pygmies have been acquainted with an alphabetic system of writing at one time, and mark their arrows so that there is no dispute about who shot the quarry (p. 287).

The Pygmies are alleged to have preceded the Australoids into Australia (p. 290).

Throughout the book the author gives Pygmy words, which certainly belong to the languages of the White race.

There is much in this book readers may not agree with as it links the Pygmies with many ancient civilizations, but if it fixes the position of the Pygmies it has done a great service to ethnology.

R. GAYRE OF GAYRE

SOCIOBIOLOGY

By Edward O. Wilson. Harvard University Press, Cambridge, Massachusettes, and 126 Buckingham Palace Road, London, 1975. Pp. 697, 300 illustrations. Price £11.00.

This book is magnificently set out to provide a comprehensive view of social behaviour from bacteria to man.

It draws upon Darwin's theory of natural selection with the findings of population genetics. This, the writer says, is sociobiology. He demonstrates the biological basis of social behaviour.

Professor Wilson points out that what is good for the individual can destroy the family, and what is good for the family can be inimical to the individual and the tribe, and what promotes the tribe weakens the family and destroys the individual (p. 4). This is, incidentally, what modern administrators have to learn, as they are intent upon upholding the individual even if it is bad for the family and the tribe.

Besides all this the book deals with aggression and conciliation in numerous lower animals. Incidentally, Professor Wilson points out that over-crowded conditions in all animals, including man, bring out the aggressive feelings on the part of some of the subjects. Yet, that being so, modern housing schemes, such as Glasgow, have built huge tower blocks since the war. This is designed to bring out these characters of aggression. The British Labour Party with all their talk of absolute equality, are doomed

to failure. The monkeys even have a grooming order whereby the dominant monkey is master and the others servants.

Professor Wilson has written a profound study, many points of which could be dealt with if space would allow.

In any event we can say that it is a worthwhile publication of which author and publishers may be proud. As a point of view *Sociobiology* has more to commend itself than sociology which has all too frequently become divorced from the underlying bases of it, the physical anthropology, ethnology, and human genetics. If this work in sociobiology is to go by we can be assured that is not the case here.

Besides all the other points in its favour there is one other: it forms a useful text book for any who work in the comprehensive study of sociology.

R. GAYRE OF GAYRE

ISLANDS OF THE SOUTH

By Austin Coates. Heinemann, London, 1974. Pp. 200, 8 illustrations, 7 appendices. Price £3.50.

This starts from the prehistoric Austronesian civilization which seems to have been at its apex prior to the First Dynasty of Egypt. Here men and women sailed from Tahiti to Madagascar in relative peace. It has left no monuments or writings. Approximately 180,000,000 people speak the Austronesian languages. They are not derived from Asia. Nevertheless, South-eastern Asia has an important strain of Pacific ancestry, but, on the whole, this is recent—not more than three thousand years ago. The movement took the form of penetration into south-east Asia from the Pacific.

The author seeks to indicate how people derived from Oceania are identified, and, also, the adaptation of an oceanic life to that of the landward man of Asia. He also indicates an inability of the Austronesians to understand credit and money (p. 13). As a consequence anyone who advances makes for inequality and has to be suppressed (p. 19).

The Indians migrated to Ceylon from early times and the Singhalese have become indistinguishable from the Indians as a consequence.

It is interesting to learn that brown-skinned Atoll people (the Austronesians) found the women of the black skinned Melanesians unattractive (p. 54). It always seems that the lighter skinned look down on the darker.

The author describes how in the unknown past the Gibraltese fleet sailed east to South America. The Austronesians in Java, although long diversified from the sea, nevertheless, when recruited by the Dutch, showed all seamanlike qualities (p. 62).

He draws a sharp contrast with the Melanesians (Eastern Negroes): "Melanesian thought belongs to an age long before man in this part of the world had begun to think in terms of the universal, and the Austronesians' larger and newer ideas were more than Melanesians could take in."

The Japanese are stated by this writer to be partly of Austronesian origin—which might well be so. My view is that the aborigines of Japan are a White Australoid (the Ainu). Then would come the Austronesian (who were white-brown), and eventually Chinese, Manchu, with Nordic elements.

Arising from this work is the origin of the Melanesians. Louis Leakey told me he hoped to take up Haddon's view that the Negroes were not African at all, but Melanesians. This may well be so. It would presuppose a larger land mass in the east than now—which we partly know was the case, even if we only relate it to the Ice Age.

R. GAYRE OF GAYRE

In this number there is an article on "The Origins of the Afrikaners and their Language, 1652-70: A Study in Miscegenation and Creole," by Ken Jordaan.

He talks of the Creolisation of the Dutch language, with which we are not concerned to any extent, as it proves nothing in terms of race. Certainly Dutch has been simplified and has received elements from French and other languages. Consequently, the Dutch do not think highly of it, which is understandable, but as it builds up its literature on a simplified basis that may well be another matter for the future.

It is, however, with the racial aspects we are concerned here. That there were crossings with the Hottentots in the early days of the settlement cannot be denied. But, there is such a thing as genetic segregation, as a result of which individuals are thrown up who are more Hottentot than White, and with assortative mating as an active force at work, these have in each generation tended to mate with like. As a consequence of this the Cape Coloureds came into being. They are not Hottentots, as such. In the same way, the same principle caused White to mate with White.

Thus we have in these Afrikaners who were of mixed blood in the first place, the principle operating which we find in the Blue Andalusian, whereby from a pure White mating with a pure Black stock (given time) they breed back to the original components, except for a tiny majority. These latter, so far as the Afrikaner is concerned, are driven into the coloured community, and this is why, out of that community, there are sometimes bred pure Whites.

The writer says that the distinction was not by race but socially (p. 476). But he fails to realise that this was the same thing. In the beginning of the disentangling of racial elements the Coloureds sank to the bottom and the Whites were on top.

The author fails to realise the great distinction between the Khoisean and the Indian in this cross-breeding (p. 480). Many of the Indians, especially the higher castes, are Caucasoids, related to the Mediterranean race.

The amount of Khoisean, and similar native blood is little, as by the process of nature it has been bred out. Only rarely can traces of non-European blood be seen in the Afrikaner.

To beat this drum, of mixed blood, no doubt *Race* has its reasons - but they are not scientific.

THE CULT OF THE GODDESS

By Lawrence Durdin-Robertson. Cesar Publications, Ennisworthy, Eire, 1975. Pp. 28. Price 25p.

This is a lecture given to the Wexford Festival. The author's point of view is that anciently the Mother-Goddess was supreme, which is undoubtedly right. He traces her cult through Irish and other traditions. However, his claims are perhaps too great, where, for instance, he says no sacrifices were demanded in polytheism. We have only to remember Rome under Nero, or, to this day, the blood-stained altars of Kala in India.

Actually the Goddess cults are an earlier stage of evolution to be associated with the lack of knowledge of the functions of paternity. When that became known it elevated the male God over the Goddess. This accounts for, in some cases, the male God coming to have a name of feminine origin.

He points out that those men who have been successful in their professions, often turn to psychism—citing Sir Oliver Lodge, Sir Arthur Conan Doyle, W. B. Yeats and Lord Dowding. This is undoubtedly true, but scarcely advances his argument.

He is concerned also to explain the growth of the Mother Goddess cults through witchcraft in the Middle Ages to our times.

THE INEQUALITY PRINCIPLE

By A. T. Culwick and J. C. Oosthuizen. Dolphin Press, Durban.

The authors make the point that now we are entering an era of conservation no longer are big families required, and this particularly applies to the Third World which is still reproducing regardless of these facts, but that also the “hand-outs” to the underdeveloped countries will have to cease. Ultimately, the writers foresee that many of the backward people will disappear (chapter 8). In the eventual struggle it is assumed that White South Africa will be overrun. This they do not believe. There is a great difference between the White nations defending colonialism and South Africa where the White population is fighting for its survival.

In chapter 9 they deal with the current heresy of “equality” despite the fact that, until recently, the whole of the evolution of our society has been based on the opposite principle. Man is derived from an hierarchical species, and one breaks with this principle at one’s peril. It is even more acutely so where different races are concerned.

The authors say that equality (as practised today) is patently absurd. They advocate additional votes related to ability.

This is a forthright statement of certain truths which need to be said.

R. GAYRE OF GAYRE

Books Received

REMARKS AND INVENTIONS: SKEPTICAL ESSAYS ABOUT KINSHIP.

By Rodney Needham. Tavistock Press, London, 1974. Pp. 181. Price £3.40.

The author, a lecturer in Social Anthropology at Oxford, deals with Kinship, which he says is in disarray. Radcliffe-Brown’s claim to have predicted and discovered the *Kariera* system of Western Australia, with repeated support by Lévi-Strauss that this was a triumph of structuralism, is critically examined. This is a worth-while book for those willing to study something other than the oft-repeated theories of the pundits.

EDUCATION THREATENS STANDARDS

Edited by Dr Rhodes Boyson. Churchill Press, Enfield, Essex, 1972. Pp. 137.

The first paper in this publication is by Professor Robert Lynn, on “Millenarian Fantasies in Education.” He points out that the millenarian ideology is derived from Jean-Jacques Rousseau. He draws attention to the extent to which the hold of millenarian movement has in British education today. G. R. Mellor very rightly points out that in Britain the social system is fluid—as it was even in the early Middle Ages. This book deserves to be read widely.

PEYOTE HUNT

By Barbara G. Myerhoff. University Press, London, 1974. Pp. 285.
19 illustrations. Price £7.50.

This is an account of the Huichol, unacculturated Mexican Indians, and their shaman Ramon. It is clear that when we read of Ramon hunting the plant, Peyote, believing it had a life in it, he may not have been far from the truth. For we now learn from the work of Dr Watson, that plants and animals have a field of life surrounding them—what in fact we might call a Soul! This book gives the significance of the sacred Peyote hunt, and the Huichol religion.

I FAUSSONE DI GERMAGNANO

By Giuseppe Aldo di Ricaldone. The Collegio Araldico, Rome, 1975. Pp. 150. 56 illustrations.

This is a carefully documented work on the family of Faussone di Germagnano which has been compiled by the Chevalier G. Aldo di Ricaldone. In this publication we have not received many works of family history, and, perhaps, that has been a weakness on our part—for family histories can provide the ready materials for a genetic survey of man. For instance, in this case, we note all the family portraits portray men with long noses. This is the result of assortative mating, where once a family is established the members mate with like, and so go on, generation by generation to reproduce the same features.

BONES FOR THE ARCHAEOLOGIST

By I. W. Cornwall. J. M. Dent and Sons Limited, London, 1975.
Pp. 239, 60 illustrations, 1 folding chart. Price £4.50.

Mr Cornwall was formerly Reader in Human Environment, London University. The book deals with the animal kingdom, the vertebrate and mammalian skeleton, the skull, dentition, the axial skeleton, shoulder and hip girdles, the fore-limb, the fore-extremities, the hind-limb, the hind-extremity, determination of species from bones, fragmentary bones, bones in the field and in the laboratory, and the estimation of age and sex.

This is a very thorough and satisfying work. It is a text book which should be in the hands of student and researcher alike.

A PIMA PAST

By Anna Moore Shaw. The University of Arizona Press, Tucson, 1974. Pp. 263, 3 maps and 31 illustrations. Price \$3.95 (paperback).

The authoress is the repository of Pima legends which she dearly loves to recount. She is one of the founders of her reservation museum, and has generally served her tribe in many offices. The book is largely a claim to have pride in Indian blood, which, from an Amerindian point of view, is quite right.

THE GOLDEN BOUGH: A STUDY IN MAGIC AND RELIGION

By Sir James George Frazer. Macmillan, London, 1975. Pp. 971.
Price £1.95 (paperback).

Frazer's *Golden Bough* needs no introduction. It is good to see it brought out (even if abridged) in such a cheap edition.

FORM AND PATTERN IN HUMAN EVOLUTION: SOME MATHEMATICAL, PHYSICAL AND ENGINEERING APPROACHES

By Charles Oxnard. University of Chicago Press (126 Buckingham Palace Road, London, S.W.1.), 1975. Pp. 218, 129 figures. Price £6.85.

Professor Charles Oxnard is Professor in the Department of Anatomy and the Department of Anthropology at the University of Chicago. In this work he has adopted an analytical method devising advanced techniques to illustrate the function from structure. He has pioneered this work and shows how modern techniques can be applied to the bones of primates. It is an advanced work of interest to all anthropologists, morphologists and anatomists.

MAYA CITIES: PLACEMAKING AND URBANIZATION

By George F. Andrews. University of Oklahoma Press, Norman, Oklahoma, 1975. Pp. 468, 446 illustrations. Price \$20.00.

What can we say about this work? It is magnificent, with illustrations (including architects' drawings) to illustrate it. It is the exposition of a civilization which passed out of ken in 900 A.D. and the monuments of which have left so impressive remains behind them that a work of this nature could be written and illustrated.

AT THE SIGN OF MIDNIGHT: THE CONCHEROS DANCE CULT OF MEXICO

By Martha Stone. The University of Arizona Press, Tucson, Arizona, 1975. Pp. 262, 11 illustrations. Price \$7.45 (paperback), \$16.50 (cloth).

This book, as its title implies, deals with the religious Concheros dance cult of Mexico. For more than 25 years the author participated in the dances. It is an organisation in which one has to progress from rank to rank. The Concheros themselves are Indian by extraction. The dances are related to a tradition dating from before the Spanish conquest, and there is a good deal of superstition and magic in this book.

INTRODUCTION TO THE CHAKRAS

By Peter Rendel. The Aquarian Press, Wellingborough, Northamptonshire, 1974. Pp. 64.

THE MYSTERIES OF THE QABALAH

By Eliphas Levi. Volume II. Thorsons Publishers Limited, Wellingborough, Northamptonshire, 1974. Pp. 288. Price £4.25.

HUMAN VARIATION AND NATURAL SELECTION: SYMPOSIA OF THE SOCIETY FOR THE STUDY OF HUMAN BIOLOGY, Vol. 13

Edited by D. F. Roberts. Taylor and Francis, London, 1975. Pp. 209. Price \$4.50.

This is a reprint of earlier studies. The volume is dedicated to the memory of Professor L. S. Penrose (1898-1972) whose papers also appear in this work. He contributed papers to the physical anthropology as well as the natural selection parts of this work.

Journals Received

TERZO MONDO

Published by the Centro Studi Terzo Mondo, Milan, Italy. Price L1.200. Vol. VIII, No. 28-29, 1975.

THE PSYCHOLOGICAL RECORD

Published by Denison University Press, Granville, Ohio. Price \$3.00. Vol. 25, No. 3, 1975.

NEUE ANTHROPOLOGIE

A quarterly journal published by Gesellschaft für Biologische Anthropologie Eugenik und Verhaltensforschung, Hamburg, West Germany. Vol. 3, No. 4, 1975.

GENUS

Journal of the Italian Committee for the Study of Population Problems, and the Italian Society of Eugenics, Rome. Price L3.000. Vol. XXX, No. 1-4, 1974.

ANTROPOLOGICA

Journal of the Instituto Caribe de Antropologica y Sociologica, Fundacion La Salle de Ciencias Naturales, Apartado 8150, Caracas 101, Venezuela. Price \$1.75. No. 38, 1974.

ETHNOLOGY

Published quarterly by the University of Pittsburgh, 4200 Fifth Avenue, Pittsburgh, Pennsylvania 15260, U.S.A. Price \$7.00 a year. Vol. XIV, No. 4, 1975.

ALASKA

Monthly journal published by Alaska Northwest Publishing Company, Anchorage, Alaska. Price \$1.00. October, November 1975.

INTERNATIONAL MIGRATION REVIEW

A quarterly journal, Center for Migration Studies, 209 Flagg Pl., Staten Island, N.Y. 10304, Price \$5.00. Vol. 9, No. 3, 1975.

ANNALS OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS

Published quarterly at 1710 16th Street NW, Washington DC 2009. Price \$7.00. Vol. 65, No. 3, 1975.

STUDIES IN PHYSICAL ANTHROPOLOGY

New journal published twice yearly, in English with Polish summaries, by the Institute of Anthropology, Polish Academy of Sciences, Kuznicza 35, 50-951 Wrocław, Poland. No. 1, 1975.

MATERIALY I PRACE ANTROPOLOGICZNE

Published by Zakład Antropologii Polskiej Akademii Nauk, Wrocław, Wrocław. No. 90, 1975.

TERRA AMERICA

Published by the Associazione Italiana Studi Americanistici, Genoa, Italy. Vol. XI, Nos. 33-36, 1975.

ZAMBEZIA

Journal of the University of Rhodesia, P.O. Box MP 45, Mount Pleasant, Salisbury. Vol. 3, No. 1, 1973. Price R2.00.

PSYCHOLOGIA AFRICANA

Published by National Institute for Personnel Research, Johannesburg 2000, South Africa. Price R5.00 per volume of three numbers. Monograph Supplement No. 8, 1975. "A Monograph Study of Curiosity in Black and White South African Students."

JOURNAL OF INDO-EUROPEAN STUDIES

A quarterly journal, Box 5224, S. Station, Hattiesburg, Mississippi 39401. Price \$9.00 a year. Vol. 2, No. 4, 1974.

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